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THE EDITOR'S PAGE

Where is it Leading?

The lead article in this issue of *AJER* is the report by Professor Thomas Kieren to the University of Alberta's Faculty of Education on his McCalla Research Professorship. Each year, one or two faculty members are awarded a special opportunity to spend an academic year in pursuit of their research. Usually the recipients spend the time collecting their research into a more unified whole. In this issue Kieren reports on two decades of research on mathematics learning. In the next issue, the address presented by Professor Lorraine Wilgosh on her work with families of handicapped children will appear. Both of these papers are distillations of research experience and are the kinds of reflections that should be the ultimate result of research endeavors.

As is generally the case, this issue of *AJER* also contains a collection of papers on a variety of topics. The articles by Cole and Housego provide an excellent illustration of how different approaches bring out complementary sorts of information. Their research on that two- or three-year segment of teacher development falling between the final steps of formal preparation and the end of the first year of teaching is part of a very active area. In fact, if we were to categorize submissions to *AJER*, this kind of work would form the largest group. However, there is much more to be done, and, to restate a theme of previous editorials, no single method can do justice to this complex period of a beginning teacher's life. Surveys give a skeleton; case studies provide soul.

The articles by Marfo and by Meyer, Wilgosh, and Mueller are two variations of quantitative methods—laboratory and archival. Although they are on quite different topics, both speak to problems in the education of young children and have implications for teachers and administrators alike. Finally, Johnson and Holdaway's article gives us some insights into the lives of principals. In a sense we have moved full circle. The study of the educational development of principals in contemporary society requires the same kind of attention that is being devoted to teacher development.

As important as all of these articles are, we are now at the stage where we need some integrative pieces. I am confident that few policy makers, teacher educators, and educational administrators work from discrete articles. The constraints of their positions demand information in a partially digested form. Unfortunately, the theory-into-practice paper has not been a priority in the academic educational research scene. Such work is more commonly found in the professional magazines and in the "pop-ed" books written by the evangelists of the lecture circuit. Researchers must rethink their roles. In the academic journals, reviews have tended to be either annotated bibliographies or meta-analyses. These have a place, but neither serves the field completely. It is time for researchers to undertake critical, analytical, and integrative

reviews to reveal the trends in a field. These state-of-the-art reviews must be located somewhere between theoretical accumulations and popular promotions. They must tell educators what directions can be safely taken and which ideas should be treated with caution. They must integrate the empirical research with the philosophical literature so that the emerging picture features what is possible in a context of what is desirable. The review process of the academic journal serves the field by subjecting the writer's ideas to the scrutiny of the research community. This yields advice in which substance is given preference to flash.

T.O.M.

The Alberta Journal of Educational Research *Vol. XXXVI, No. 3, September 1990, 191-201*

THOMAS E. KIEREN
University of Alberta

Understanding for Teaching for Understanding[1]

> Anything said is said by an observer.
> The observer speaks to another observer
> who could be himself.
> The observer is a human being.
> Whatever applies to living systems applies to the observer.
> (Maturana & Varela, 1980, p. 8)

This presentation is based on reflections of a year spent as an observer. The things I talk about today are in the domain of the observer. These observations relate to a continuing concern of mine expressed in a paraphrase of a quote from Warren McCullough (Kieren, 1988): "What are persons that they can know number? What are numbers that they can be personally known (p. 162)?" The observations I am making today pertain to the first of these concerns—the person as an understander of number and mathematics in general.

In highlighting these observations, let me turn immediately to the title and let me stretch it out a bit: "Understanding for Teaching for Understanding for Teaching for Understanding for Teaching for Understanding."

This extended title is meant to illustrate several things. First, the theoretical ideas, the observations, and the curriculum materials discussed below provide various ways of enhancing *cognitively guided instruction.* This notion, developed by researchers in the United States such as Penelope Peterson at Michigan State and my colleagues Tom Carpenter and Liz Fennema at Wisconsin (Fennema, Carpenter, & Peterson, 1986), suggests that if teachers could have in mind how children cognize mathematics, such insights could guide their instruction. As Dean Bob Patterson would say this idea harks back to the work of John Dewey. Or, put in its strongest modern form by the constructivist thinkers, one gets a favorite quote of mine from Les Steffe (1988) of the University of Georgia: "The child constructs the mathematics. The teacher constructs the child."

In the extended title we see many rounds: Understanding a child's understanding brings about teaching to build that understanding. The extended title suggests that this pattern repeats itself. One might even argue that it occurs recursively; prior understandings, whether of the child or teacher, are a basis for new understanding.

The extended title also appears to imply that this process occurs linearly and over time. It might suggest that the understanding at the beginning was

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Thomas Kieren is a professor of secondary education. His special interests are in the nature and growth of personal mathematical knowledge and the role of teaching in promoting such growth.

distant and distinct from the understanding at the temporally later end. This might be the visible or explicate order of things. The observations I want to discuss with you today are of different implicate and enfolded and unfolding orders of things. Such orders are nonlinear in nature.

Notice when one folds this title the layers of understanding are suddenly seen as close and connected. This would be even more obvious if I had rolled up the understandings. Then the hole in the middle could be seen as the site of still earlier understandings and so on.

What I would like to do in the remainder of this brief essay is to give a flavor of the kinds of observed orders I was studying and how in fact we are trying to make sense of them. I will do four things:

- Provide a basis in children's mathematical behavior which suggests that understanding understanding itself is worthwhile for a researcher or teacher;
- Present a nonlinear model of understanding as it is done by a person which has been built in collaboration with Dr. Susan Pirie of Warwick and Oxford Universities;
- Present a few properties of the model with examples; and
- Present some consequences for instruction and curriculum.

Understanding Understanding—Why and How

Consider the work of a grade 7 boy, Ronald. Ronald was part of a class which had received careful instruction in the arithmetic of fractions, especially adding, multiplying, and dividing.

a. $\frac{2}{3} + \frac{1}{2} = \frac{3}{5}$

b. $\frac{2}{3} + \frac{5}{8} = \frac{7}{11}$

This work shows a classic error in adding fractions which evaluation data would suggest occurs in the work of junior high school children in Canada, the United States, or in many countries of the world including the United Kingdom and Israel.

Here is Ronald's work on a third item. This involved him in making a judgment on a quasiconcrete situation.

c. An order came in for $\frac{2}{3} + \frac{13}{24}$ pizzas. The cook said, "That will total more than one pizza."
Was the cook right? *No.*
Why? *Because* $\frac{2}{3} + \frac{13}{24} = \frac{15}{27}$ *and that is much less than 1 whole pizza.*

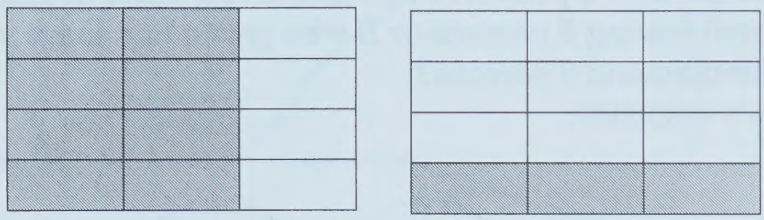
At this point the teacher (in this case me, because Ronald was part of a teaching experiment which I was conducting) might be prompted to say, "Ronald has received meaningful instruction, he's thinking, but he just doesn't understand addition."

But let's now turn to Ronald's work on the very next item.

d. George ate $\frac{2}{3}$ of a medium pizza. Ellen ate $\frac{1}{4}$ of a medium pizza.
How much more pizza did George eat than Ellen did?

Ronald, like the other students, had received only incidental instruction on subtraction.

$$\frac{2}{3} - \frac{1}{4}$$
$$= \frac{2x4}{3x4} - \frac{3x1}{3x4}$$
$$= \frac{8}{12} - \frac{3}{12}$$
$$= \frac{5}{12}$$



In this case, where Ronald did not have a ready algorithm, his understanding of this situation and clearly of addition is easily observable. His work shows an image oriented algorithm paralleled by an action based on symbolic properties. Work like Ronald's prompts one to ask, "What might it mean to understand mathematics [or anything]?" and "What might it mean to teach for such understanding?"

There has been considerable work in mathematics education over the past 20 years on understanding (Skemp, 1987; Schroder, 1987). One approach has been to develop categories of understanding such as instrumental and relational understanding. By the former is meant that a child can do something but does not know why; by the latter is meant that the child can justify a performance in terms appropriate to the experience of the child. Other work has elaborated other categories of understanding related to the tools, materials, or experiences used in the process of doing the mathematics—for example, concrete, iconic, or symbolic understanding. Still other work (Tall, 1978) suggested a combination of categories as characterizing understanding. This latter sounds practical in the sense of a researcher or teacher having

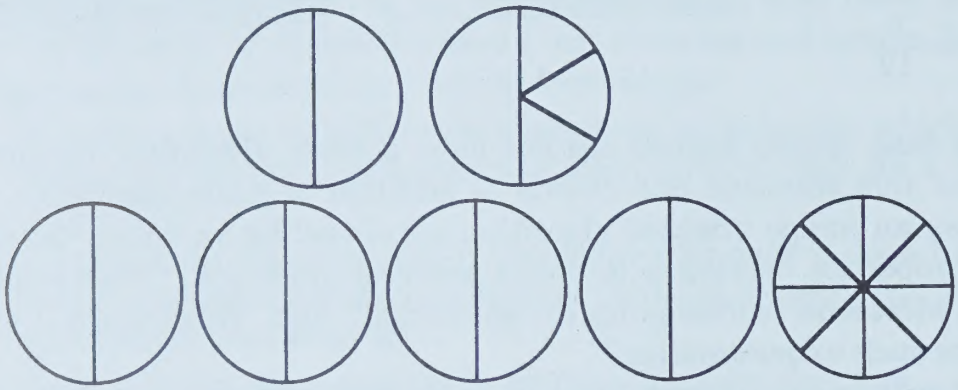
	Concrete	Iconic	Symbolic
Relational			
Instrumental			
Logical			
None of the above			

a two dimensional check sheet.

It may be that such categories or vectors or combinations of categories might well describe specific mathematical behaviors or outcomes of children's work such as each of those of Ronald above. Yet, as claimed by Pirie (1988), they do not well capture understanding as seen in the continuing mathematical work of students. She posits that such understanding is not well portrayed by either categories or linear combinations of categories.

With Dr. Pirie, I have been developing a theory of mathematical understanding as a whole, dynamic, nonlinear, recursive growing process (Kieren & Pirie, in press). As Minsky (1989) has recently suggested, unlike a machine, humans can know something or understand it at many levels at once.

That this is not a simple platitude is evident as one carefully observes children learning and doing mathematics and is particularly visible in this single piece of work by Jim, aged 12, in response to this question:
Who got more, person A who gets a fair share of pizza when 2 pizzas are shared among 3 persons or B who gets a fair share when 5 pizzas are shared among 8 persons?
Jim's response:



A gets more.
Because $\frac{1}{3}$ *of* $\frac{1}{2}$ *is* $\frac{1}{6}$ *and* $\frac{1}{2} + \frac{1}{6} = \frac{3}{6} + \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$. $\frac{1}{2} + \frac{1}{8} = \frac{4}{8} + \frac{1}{8} = \frac{5}{8}$.
$\frac{2}{3}$ is more than $\frac{5}{8}$. $\frac{1}{6}$ is bigger than $\frac{1}{8}$ because there are fewer pieces.

This item response nicely shows Jim's understanding the arithmetic of fractions in many ways at once. For this to occur, these understandings must be close for the person having them. We are trying to build a theory which captures this phenomenon.

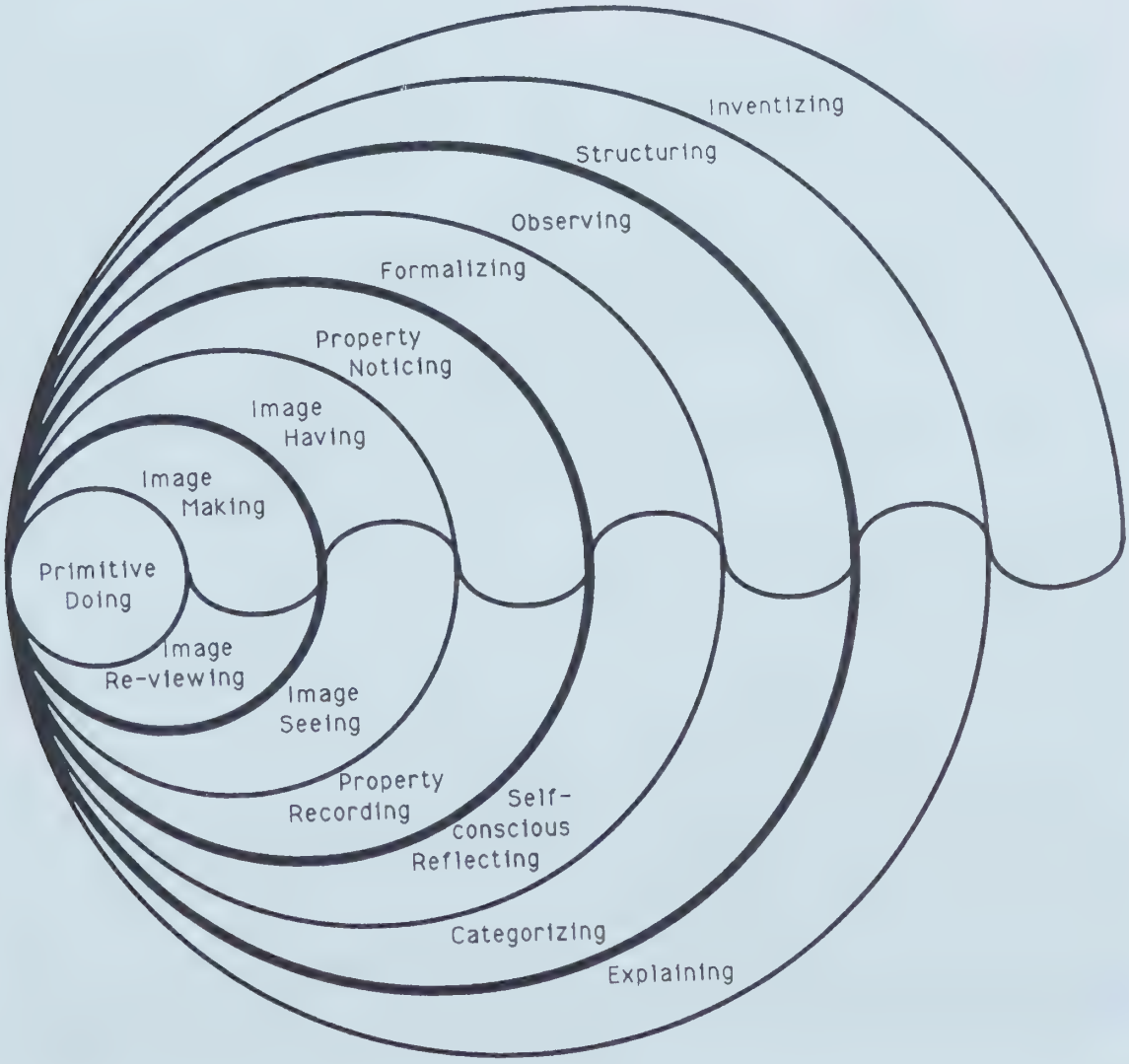
What does a person's mathematical understanding (MU) "look like"? I suppose one could picture it as a growing amorphous phenomenon (see next page).

But we are trying to theorize and observe features of such understanding which go beyond such a vague image. In trying to characterize mathematical understanding, we have been informed from many sources. Our theory represents an attempt to elaborate a constructivist definition of understanding provided by von Glasersfeld (1987):

> The experiencing organism now turns into a builder of cognitive structures, intended to solve such problems as the organism perceives or conceives ... among which is the never ending problem of consistent organizations [of such structures] that we call understanding. (p. 7)

In trying to provide the understanding for teaching for understanding, we are trying to model the child, the student, or the person as an understanding agent. We picture the students we observe as self-referencing, self-maintaining persons who can access their own thinking as part of their learning environment. What they do in any situation is not caused by this situation; it is determined by their own structure which is continually growing and changing. This view is based on the work of Maturana and Varela of Chile

MU


Inventizing
Structuring
Observing
Formalizing
Property Noticing
Image Having
Image Making
Primitive Doing
Image Re-viewing
Image Seeing
Property Recording
Self-conscious Reflecting
Categorizing
Explaining

(1980, 1987) and Tomm (1989) of the University of Calgary who see knowing as the ability to take effective action as seen by an observer. Such knowing grows through recursion. That is, the person knows at a new level through making distinctions in previous knowing.

As we try to give a clearer characterization of the pulsating growing whole which is mathematical understanding, what does our theory look like? We consider understanding done by a person as a leveled phenomenon with eight kinds of levels (see previous page). But you should not think that the levels constitute understanding. It is a nonlinear dynamic whole characteristic of each person.

It is beyond the scope of this essay to describe the model above in any detail. But I would like to point out a couple of features of the theory and then briefly discuss a few implications of the theory for teaching and curriculum making.

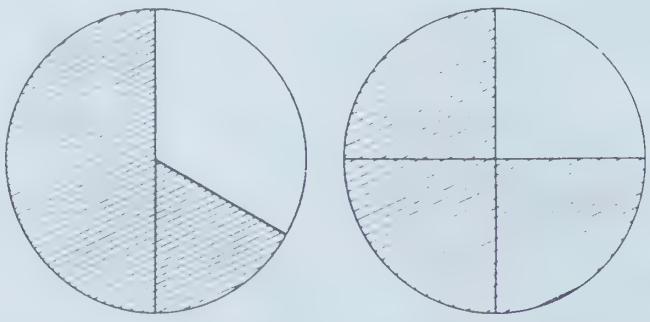
A central feature of personal understanding of anything is the capability to *fold back*. A brief description of this key process which we have observed in students' mathematical work will give you a flavor of the theory.

Imagine a grade 7 student, Tracy, who was started with *primitive* or assumed *doing* capabilities such as dividing up equally, knowledge of fraction words, and so forth. Through solving dividing up or quotient problems, she has developed an *image* of fractions as describing amounts and, in fact, she sees that different fractions, for example, $\frac{3}{4}$ and $\frac{6}{8}$ describe the same amount. She has elaborated this image by understanding addition and multiplication as *properties* of this quantitative image of equivalence and now sees fractional numbers not as individuals but as a *formalized* class—numbers of the form $\frac{a}{b}$. Our theory suggests that her growth of understanding of fractions to date would be a nonlinear path among the levels from primitive doing to formalizing (Pirie & Kieren, 1990).

Now the teacher asks a question which *invokes* inner level understanding for Tracy:

Teacher: Is there a fraction bigger than $\frac{a}{b}$, smaller than $\frac{c}{d}$?

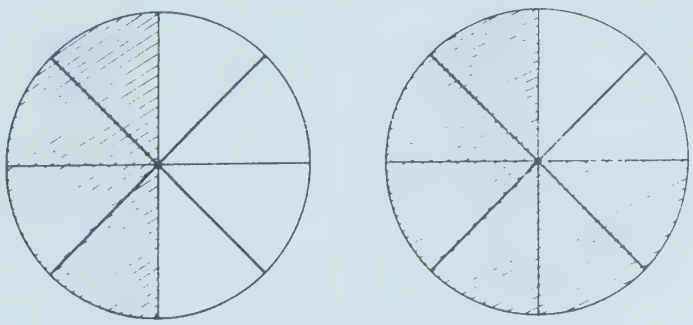
Tracy: *????* consternation reigns!
But then
Tracy: (folding back) *Well,*



Half plus half of a fourth is more than a half and less than three fourths.

[This is folding back to her image of fractions from image making and image having.]

At this point Tracy who has the *property* equivalence in her understanding of fractions could note:



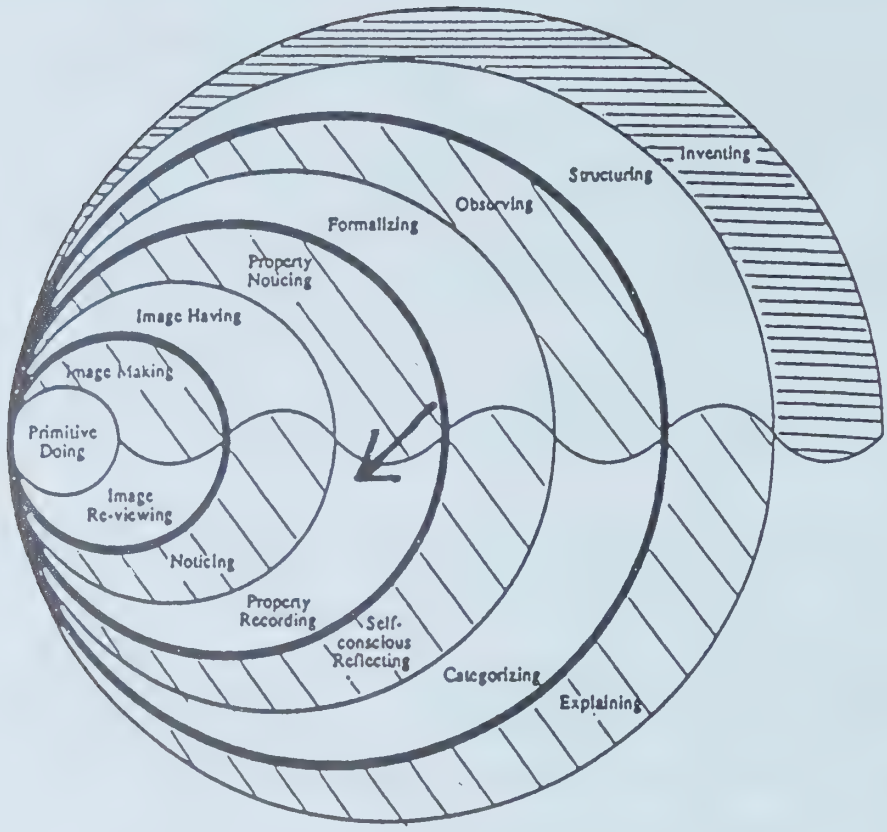
$\frac{1}{2} = \frac{4}{8}$ $\frac{3}{4} = \frac{6}{8}$

and $\frac{5}{8}$ is half way between

She could then reconstruct her fraction knowledge at a property level or could make an intuitive leap back out to the formal level and say, "Oh the average of $\frac{a}{b}$ and $\frac{c}{d}$ will work!" [a formal observation]. In fact we are speculating that folding back might partly account for the notion of intuitive leaps reported in mathematics and other areas. Thus from a level of formalization Tracy *folded back* to an *image making or image having* level to make sense out of the formal level puzzle. After that she used equivalence at a *property noticing* level. The impact of such work was to reconstruct her understanding of fractions to add in this new idea of betweenness. Folding back was not simply recall. There was nothing in her history to directly answer the question. Tracy had to remember her knowing and to reconstruct her inner level knowing as a foundation for outer level, formal knowing.

A second key feature of this model is that there is a *complementarity of a process and a form oriented action.* As seen in the model this complementarity occurs at every level. I would like to look for a moment at one ring of this model (see next page).

This is the level of *property noticing* which is complemented by the formal aspect of *property recording*. Under support from Alberta Education I have been building and testing some materials which allow high school students to use the computer as a tool to build geometric ideas. In one of the units they are asked to build from scratch their own geometry of a set of geometric objects called spirolaterals. As one of the tests of the material and as an investigation into the theory above, I had three pairs of university students, all with good mathematics backgrounds, engage in the study of spirolaterals. The materials use the above model of understanding and promote growth from image making to image having to property noticing to formalizing to observing to proving in a structure. Two of the groups very quickly had the image of spirolaterals as inwardly spiralling geometric objects. If you had been there, or had observed the videotaped record of their computer work,

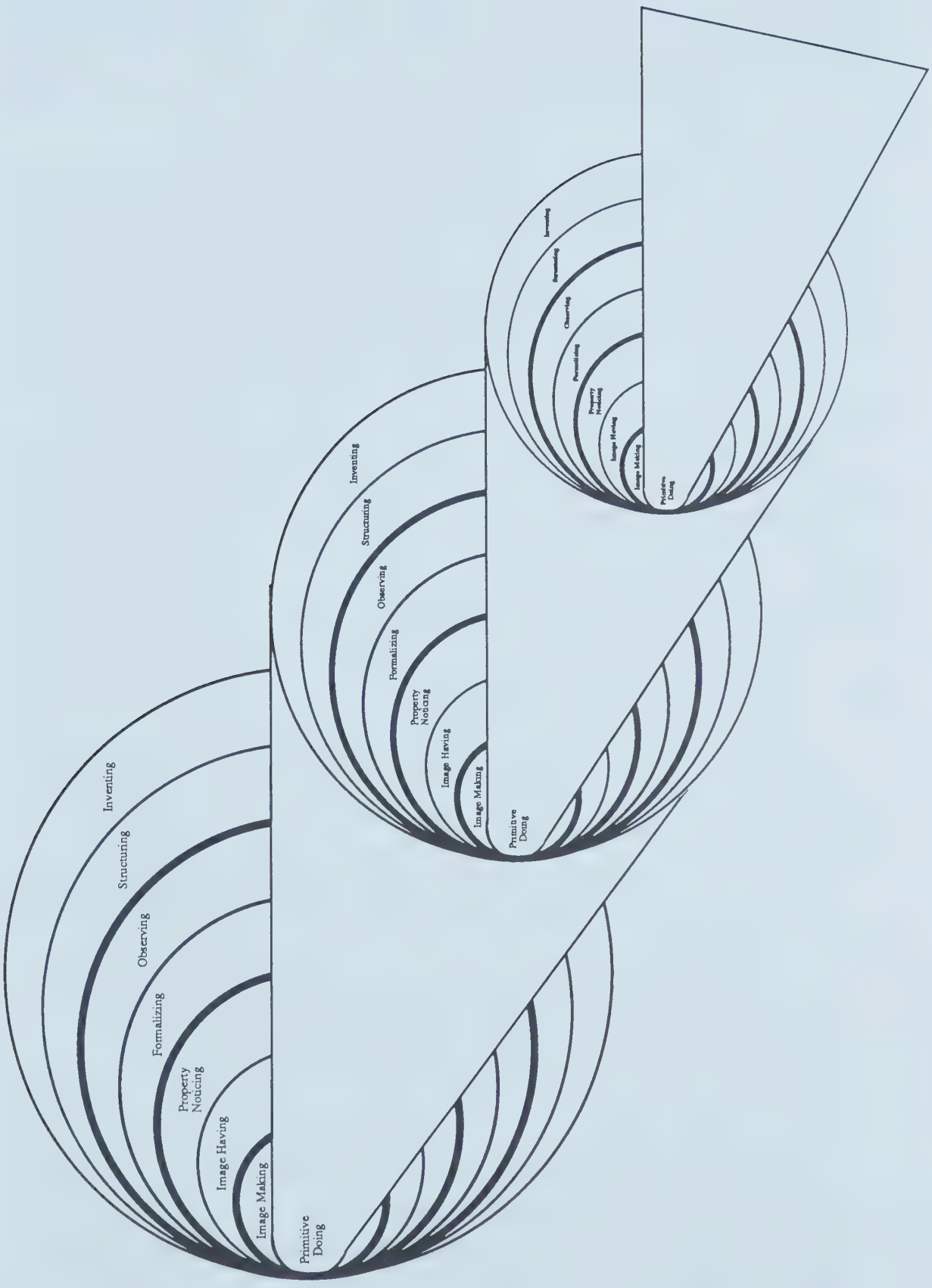


you would have seen these four students almost madly generating or noticing properties. But they did *not* record them in any way physically or in writing. I suspect they didn't even make many mental notes of what they were doing. It was as if even these advanced students sensed the existence of properties but did not have them. In terms of our theory we point out that one must take the form-oriented action of *property recording* before one can be said to be fully functioning at the *property noticing* level. Otherwise one's understanding is uncompleted at that level. More critically for practice, if little attention is paid to the form of recording (at least mentally and orally), then it might appear to the teacher that the students had not learned anything from the instruction in that session. The property recording is also essential to the student. The student must not only do something, but be conscious of each act. The person must not only act in an understanding manner but must give this action some form.

Curriculum Implications

I would like now to turn briefly to some curriculum implications of the model. In doing a teaching experiment on fractions, each day I built experiences for students based on their growing understanding. In some sense the curriculum was wrapped around their previous knowing. Further, I was struck with the continuing problem I experienced of attempting to invoke inner levels of understanding to help students grow in understanding.

To see other implications I would like to call your attention to another feature of the model—*primitive doing*. This inner core represents simply what the observer assumes the person can do as we start to observe his or her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Curriculum Implications

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To see other implications I would like to call your attention to another feature of the model—*primitive doing*. This inner core represents simply what the observer assumes the person can do as we start to observe his or her understanding. This gives the model a *fractal quality,* because anything can be assumed to be previous doing. This allows us to consider the understanding of fractions as quotients as developed in grade 7 as *primitive doing* for a whole new set of levels of understanding of fractions as algebraic operators. Thus the curriculum, like understanding as done by a person, can be thought to have a fractal form (see previous page).

Furthermore, as one looks at the circle of primitive doing carefully, one would also observe the same levels in the understanding there. Thus the model suggests that one might research the core understanding of the "half fractions": $\frac{1}{2}, \frac{1}{4}, \frac{1}{8}, \frac{1}{16}$ ... and see if the same model of understanding with levels and folding back did not obtain. I am currently working with 8-year-olds to observe this phenomenon.

Let me close by asking what good is this theory? With Einstein (Fine, 1986), I look at the test of it as follows:

> [a theory is] a self sharpening tool whose warrants and value in the end rest on this, that they permit the coordination of experience "with dividends" [*mit vorteil*]. (p. 91)

What are the dividends?

These are still speculations but the theory allows one to see:

- Understanding as entailing folding back for the reconstruction of inner level knowing.
- All levels of understanding as useful and critical. Each has its own actions, forms, and logic which should be considered in instruction.
- Understanding is seen at many levels at once.
- Curriculum making is a wrapping around actively.
- Curriculum as well as understanding for the person can be observed to have a fractal quality.
- Teaching is pointing the child ahead to possible new levels, but also back to reconstruct inner level understanding.
- Understanding is an active quality of the person. Teaching for understanding cannot mean giving understanding.

Finally, folding you back to my example at the beginning of this discussion, the theory allows us to see children's understanding, such as Ronald's,

not simply as a succession of disjointed products however well classified, but as a dynamic growing whole.

Let me finish with a favorite quote from Maturana (Maturana & Varela, 1980): "At this point there is much more to say, or nothing" (p. xxx).

I hope I have left you with the feeling that there is much more to say and study about *understanding for teaching for understanding.*

Note

1. A 1990 McCalla lecture, Faculty of Education, University of Alberta.
2. Research underlying this paper was supported by a SARAC Grant of the Faculty of Education, University of Alberta and a British Council Travel Grant.

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Ontario Institute for Studies in Education

Personal Theories of Teaching: Development in the Formative Years[1]

I introduce four first-year teachers who began teaching in different contexts and with different conceptions, expectations, and goals. Each has experienced and responded somewhat differently to the realities of her first year of teaching. I describe how they have been able to put into practice their personal theories of teaching, consider how their understandings have changed and developed over the first year, and discuss some of the conditions that seemed to enable or militate against the enactments of their beliefs. I conclude with some thoughts on the importance of collaboration between schools and faculties of education so that real change and improvement in teacher education might occur.

Teaching is a complex and personal phenomenon. Each teacher's practice is an expression of a personal and professional way of knowing that is shaped and informed by personal and professional background, experience, perceptions, attitudes, beliefs, and goals. Research on the influences of life experience on teacher thinking and teacher practice (Ball & Goodson, 1985; Butt, Raymond, & Yamagishi, 1988; Clandinin, 1986; Connelly & Clandinin, 1988; Feiman-Nemser & Buchmann, 1986; Knowles, 1988; Knowles & Charvoz, 1989) and on teachers' implicit theories, attitudes, and beliefs (Cole, 1988; Collay, 1989; Holt & Johnston, 1988; Hunt, 1987; Weinstein, 1989) provide considerable evidence to support the idea that teaching is much more than formal theory application or skill implementation.

Personal Theories

Students entering teacher preparation programs bring with them the beliefs, attitudes, ideals, and ambitions developed over years of life experience. As public school and university students, in some cases as parents, in others as community leaders or camp counselors, and in all cases as persons involved in human affairs, they have implicit thoughts and ideas about education and teaching. Having evolved over years of life experience, these ideas develop into relatively sound personal and pragmatic truths. These personal theories are informal and unvalidated (in the scientific sense) and in most cases remain unarticulated; yet they are the personal foundations on which an individual's professional practice is built.

The concept of personal theory has its epistemological roots in the writings on personal knowledge by Ryle (1949) and Polanyi (1958) and in Kelly's (1955) theory of personal construct. Similar to the more recent notions of

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personal philosophy (Kroma, 1984) and personal practical knowledge, a term coined by Connelly and Diennes (1982) and developed by Connelly and Clandinin (1985), the concept of personal theory is most like Hunt's (1987) notion of implicit theories and Handal and Lauvas' (1987) practical theory.

Handal and Lauvas (1987) define practical theory as:

> A person's private, integrated but ever-changing system of knowledge, experience and values which is relevant to teaching practice at any particular time.... "Theory" in this sense is a personal construct which is continuously established in the individual through a series of diverse events (such as practical experience, reading, listening, looking at other people's practice) which are mixed together or integrated with the changing perspectives provided by the individual's values and ideals. (p. 9)

The point of departure for Handal and Lauvas' notion of practical theory and mine of personal theory is in their use of the term in a collective sense. Based on teachers' similarities in experiences, values, and beliefs they suggest that it is possible to develop a "collective practical theory." In contrast, personal theory is a recognition and articulation of an individual's characteristic uniqueness. Personal theory differs procedurally from the comparable concepts of personal philosophy and personal practical knowledge in that personal theories are teachers' not researchers' interpretations.

A Constructivist Approach to Teacher Education

There would be little argument that teachers new to the profession begin their careers with enthusiasm, energy, and high ideals and aspirations; that the first year of teaching is a challenging and often frustrating and discouraging time for them; and that new teachers learn and discover a lot during that first year. The literature on teacher growth and development is rife with case studies, analyses, and descriptions of teachers' experiences in the beginning years of teaching and their attempts to deal with the realities of classrooms and schools (e.g., Bullough, 1989; Lortie, 1975; Ryan et al., 1980).

Those of us who talk to first-year teachers or remember our own first year are familiar with charges of inadequacy against the preservice program in preparing teachers for the realities of classroom life. The impression is that the pedagogical theories and concepts studied at the university, although sound and important, are not necessarily relevant to what goes on in real classrooms. What is heard, read, and studied on campus contributes to the theoretical understanding of pedagogy, but in the real world, in classrooms, these theories do not play out. What goes on in school classrooms is actual; what goes on in campus classrooms is largely only possible. As we continue to struggle to improve the ways we prepare teachers for professional responsibility, we hope these same charges will, in the future, not be laid and that the connections between the theory studied at the university and the real world of practice will more easily be made.

In preservice teacher education the gradual shift toward inquiry-based programs is illustrative of efforts to take into account the personal and complex nature of teaching. One approach receiving increasing support is

based on a constructivist view of teaching and learning (Clark, 1988; Feiman-Nemser & Buchmann, 1986; Goodman, 1988; Grimmett, 1988; Ross, 1988). This notion seems to hold particular promise for rethinking preservice teacher education.

At Monash University, for example, each year for the past decade or so, prospective science teachers have graduated from a teacher preparation program based on constructivist views of education. One guiding principle of that program derives from the perspective of student teacher as constructivist learner with preconceptions of self, of science, and of teaching and learning. The teacher preparation program is designed to take into account and build on these preconceptions by providing experiences which enable the students to assess their existing knowledge and beliefs, reflect on how they relate to the new ideas presented, and rethink and discuss their ideas throughout the reconstruction process.

> The well developed views of teaching and learning [that student teachers bring to the program] are very persistent and often at odds with the views we hope to cultivate. Hence the views need to be identified, discussed and evaluated by student teachers in light of carefully managed teaching/learning experiences. (Gunstone & Northfield, 1987, p. 3)

Taking into account prospective teachers' preconceptions or personal theories of teaching and learning, and encouraging the notion of preservice teacher education as the first stage of career-long professional development and knowledge reconstruction (Gunstone & Northfield, 1987) seem to be realistic and appropriate principles to guide the education of prospective teachers. Presumably time spent in the preservice program making explicit and examining these preconceptions and developing skills in, habits of, and appropriate attitudes toward reflective practice will facilitate the development of self-aware and inquiring professionals who will then continue to examine and reflect on their teaching.

What about those teachers who leave their teacher preparation programs having examined their preconceptions and developing conceptions of teaching and learning and who are intent on career-long inquiry? What is the first year like for them? Do they maintain their attitudes, perspectives, and ideals? Do they fare any better or worse for their self-awareness?

A Study of Teacher Development

The purpose of this study was to follow the development of the personal theories of teaching of four beginning teachers as they progressed through the first year of teaching and to identify factors and conditions that seem to enable or constrain the enactment of their beliefs. I present profiles of each teacher's personal theory of teaching, describe each teacher's first year practical situation, and suggest ways that faculties of education and schools might better facilitate the professional growth of new teachers.

Overview of the Study

Four prospective teachers enrolled in a one-year after-degree preservice teacher education program joined me to begin an exploration of their implicit

theories, attitudes, and beliefs about teaching. When these four teachers left the university to begin their first teaching assignment, they took with them new and important knowledge and skills related to teaching, learning, and education. Like most beginning teachers, they had studied theories and practices of learning and development; considered issues in education from philosophical, psychological, sociological, and political perspectives; learned skills and techniques associated with effective teaching; and studied and experimented with various methods of and approaches to delivery of curricula. They also took with them important knowledge of a different sort—not new, but articulated personal knowledge. Unlike most beginning teachers, they had also spent time studying their own preconceptions and developing conceptions of various aspects of education.

The BPT Program

Over the course of the academic year these four participants, then student teachers and at the time of this study first-year teachers, began a program of self-inquiry through a series of experiential reflective activities, group discussions, and individual in-depth interviews. By the end of the preservice program each had articulated, orally and in writing, a Beginning Personal Theory (BPT) of teaching with which they were about to enter the profession.

A detailed description of the nature and content of the self-inquiry program and an analysis of student response to the BPT program is presented in an earlier paper (Cole, 1989). A brief description of the program and articulation process follows. The content of the BPT program consisted of 10 experiential activities designed to correspond with the main topics covered in an educational psychology course (e.g., styles of classroom management, effective teaching, roles of the classroom teacher, learning styles, discipline). The procedure for the completion of each activity was based on the four-phased experiential learning cycle (adapted from Kolb, 1984 by Hunt, 1987).

Each activity began with an imaging exercise in which the students were asked to recall and recreate a personal experience relating to a particular issue or topic. This experience provided the basis for reflection. The students then in some way recorded the event describing their perceptions of and responses to it. Either independently or through group discussion and analysis they made sense of the experience drawing conclusions about their understandings. These conclusions were articulated in the form of summary statements that they were then able to test over a period of time to see how they fit with the formal theories they were studying, as well as with the teaching practices they were observing during their practica.

We met as a group after each practicum period to discuss their developing conceptions. At the end of the program, after this period of examination, the students reported their results. They articulated their conceptions in a comprehensive explication of a Beginning Personal Theory of Teaching. This final statement was a synthesis and extension of the insights gained from each BPT exercise. The transcripts of our recorded discussions provided additional insight.

In addition to statements about their attitudes toward and beliefs about various educational issues, the four teachers made statements of intent about their teaching and their classrooms. They expressed visions and ideals about what their classrooms would be like and how they would teach. They stated expectations about the difficulties and demands of the job. They were prepared to be challenged in many ways and hoped that they would be able to successfully meet these challenges. Most of all, they expressed enthusiasm and eagerness to begin, satisfied with their career choice.

The inquiry has continued through the teachers' first full year of teaching. The teachers and I have continued to meet to study, through discussion, their personal theories of teaching. We have considered how they have been able to put their theories into practice, how their understandings have changed and developed over the first year, and we have discussed some of the conditions that seemed to enable or militate against the enactment of their beliefs.

I would like now to introduce the four teachers and present brief profiles of the personal theories of teaching with which they entered the profession. Following each one through the first year, we see how each teacher experienced and responded to the realities of her first year of teaching, "doing [her] damnedest" to enact her beliefs, "no holds barred" (Bridgman, 1945, p. 445). This provides the basis for some reflections on how, as teacher educators and experienced practitioners, we can better understand and facilitate teachers' development in the formative years.

Wendy

Wendy enrolled in the primary/junior component of the preservice teacher education program immediately on completion of an undergraduate degree. Because she wanted to teach children in the early primary grades, Wendy took an elective kindergarten course. Her first job was a half-time position teaching kindergarten.

Wendy's Beginning Personal Theory of Teaching

The following represent views Wendy repeatedly and consistently expressed in her written statements and in our interviews and discussions throughout the preservice year; they seem to reflect the fundamental principles of her beginning personal theory of teaching. Wendy gives importance to:

- providing the children with a warm, accepting, inviting, and stimulating learning environment;
- providing positive and successful learning experiences;
- providing meaningful and relevant learning materials, "[materials] that are relative to their ability and to their age, things that are in good shape";
- providing opportunities for active involvement and discovery;
- being sensitive and responsive to the children's individual needs and differences;
- providing guidance and support for the development of individual potential. "Each child has to develop at his or her own potential and rate,

and to the best of his or her own ability. That should be the goal for both [teacher and student]";
- fostering a desire to learn; and, in short,
- "mak[ing] a difference in the lives of the children that pass through my classroom."

Theory in Practice

Wendy had definite ideas about what she wanted her classroom to be like, the kind of first school experience her children should have. She had articulated her beliefs, goals, and ideals during her preservice program and was determined that they be expressed in her practice. She was presented with a number of obstacles that she routinely set about to overcome, often at considerable personal cost in time and money. In order to be able to realize her objectives she had to be extremely resourceful and innovative. She worked at modifying her classroom and her program to suit her personal image of her practice. "I was hired just before school started," she says, "and everything has been struggle, struggle, struggle just to get on top of it and stay one step ahead of the children.... But I'm enjoying it."

Like most first-year teachers, Wendy was faced with a less than ideal first assignment: lack of space, materials, resources, and a group of children she described as "all the leftovers: children who should be in another school but who wanted a half-time program so they came to my school, a mixture of different sorts of children, a lot of only children." On the bright side, though, Wendy's first assignment was only half time (with half-time salary, of course). She was able to use the rest of her day for planning, developing, and collecting materials and ideas, and for trying to modify her classroom and program so that her practice could be more consistent with her beliefs.

Space and Ambience

Wendy's classroom was located in what she called an overflow room, an area in the school that because of its limited capacity and accoutrements was ordinarily used only when extra space was required. Situated in this less than adequate physical space, Wendy had to set about remodeling the area, to "basically construct a single kindergarten." The severe shortage of space made the provision of opportunities for active involvement and self-discovery difficult, but with some effort and imagination she was able to approximate her goal. She did not have the space to set up a puppet center, for example, and she had to construct a barrier between the sand and water tables because they had to be placed side by side, "and they really shouldn't be." She had to limit the number of people allowed at the painting center at one time because she had only half an octagon-shape table for painting. "It would be really nice to have a whole one.... But there's not a lot of room."

The writing center she had created became so popular with the children that she had to try to expand it as best she could. "At first there was just half a table, and room for three people. Well, so many people wanted to go there all the time, and I didn't want to discourage people going to the writing center so I expanded it, made it bigger; recreated my room: added another

table, a typewriter, tracing letters, markers, anything that I could get hold of."

Wendy made a number of modifications in an attempt to make the classroom "as welcoming and as stimulating as possible." Sleeping bags and pillows made the reading corner "a little more comfortable." Having plants in the room, decorating the walls with children's work and "some other basic things" such as the alphabet and numbers, and using bright colors were all attempts to "stimulate the room." Not having a carpet in the main group area was remedied when the superintendent visited her classroom and recommended one. "That will make it nicer. I think it's pretty warm, except for the concrete."

Materials and Supplies

Lack of supplies made it difficult to provide meaningful and relevant learning materials. A shortage of painting easels in the school restricted Wendy to "flat drawing." "Besides," she says, "there isn't enough room to set one up anyway."

> It's ideal when you think of the things you could do with the children but when you don't have the supplies.... For example, I don't have pattern blocks. I don't have unifix cubes or any sort of connecting cubes, anything along that line.... I had to make a huge order and luckily [the Board office] okayed some of it. I was ordering things like puzzles, masks, and various other materials. I find [the lack of supplies] very limiting. So I try to make it up in other areas.... It could be a lot more stimulating for the children if the materials were there.

> It's fabulous what we learn about teaching math or language, or whatever—great ideas—but if you don't have the supplies to do it then you don't have the supplies to do it. It's very well and easy to say why not ask the parents or do this or that but it takes a lot of time to get that kind of thing organized. I find I'm basically just one step ahead of the children.

Because the library in the school had relatively few books appropriate for very young children, Wendy made regular trips to the public library in her home town (about 100 km from the school). "Every second or third Saturday I go and change the books.... It gives the children a bigger selection, more variety. And they bring their books back when they go to the library. And that adds to the choice for all the other children too."

Wendy strongly believed in the Whole Language program used in her board and wanted to use "Big Books" and "predictable books" but found that she did not have easy access to those materials because the borrowing policy required that all requests for the materials be made at the end of the last school year before she was hired. But she was able to come up with a solution.

> I'm sharing. I've discussed it with the other kindergarten teacher. When she gets a Big Book in she's going to try and use it at the beginning and then give me time at the end. At least they'll get some of it.

> And it's the same thing with the idea of using poetry. I think the idea is fantastic but where do you get those poems? How on earth can you put these ideas into practice when you can't find the resources to do it with? I saw [the person who introduced Wendy to the idea] at the last professional develop-

> ment day and he recommended a few books. I tried to get down some of the names. But, you know, I go out and buy a couple of books and it comes out of my pocket. At half a salary that really hurts.

Program Emphasis

Wendy maintained her view of the need for sensitivity and responsiveness. She described her program goals as being consistent with the needs of the children in her room.

> So for my kids, it's a lot of just learning how to play together cooperatively.... In another class my goals might be quite different.... You need to just plan to what you think your children are capable of accomplishing.... I know the abilities of my kids at this time and that's what I've got to focus on.

When Wendy first began to make explicit her ideas and ideals of teaching, she spoke often about her ambition to provide a warm and accepting environment for the children, to be able to strike the balance between providing freedom and maintaining control.

> The teachers I really liked were the teachers who could relate to me, or who were warm and sensitive. I think more than anything that's what I try to do, and yet keep my thumb on things. When I think back that's what I always remember. And someone who was able to keep control over a class and make it interesting. That's what I strive to do.

Wendy's summary comment on her teaching practice is reminiscent of her earlier statements in her Beginning Personal Theory of Teaching.

> One of my main goals is for all my children to enjoy being there, enjoy coming to school, [to think that] school is a great place to be.... The second is to stimulate them as much as possible in the way of language—oral and written—and reading ... and the different levels of reading.... All I ask is that they do their best.... It seems like I have one main role that is basically my goal, and that is to make it a nice place for children to be. In that sense I'm a provider: a provider of materials, or a provider of warmth, or of nice comments or discipline or whatever. It seems like everything else stems from that. Everything comes back to one main goal—to be there for the children.... [A good day] is just the little things [the children] say, like "It's really nice to be here. I really like being here." It makes you feel good to know that [school] is a positive thing for them.

Despite what seems like a sink-or-swim situation, Wendy insists she is "in a good school," that she has been well supported by the other kindergarten teacher, the principal, and the other teachers in the school. She has worked hard to make her practice an expression of her explicated beliefs.

Monique

Monique enrolled in the intermediate/senior section of the preservice teacher education program immediately following completion of an undergraduate degree. She wanted to teach high school French and/or English. Her first full-time teaching assignment was grades 9 and 12 English.

Monique's Beginning Personal Theory of Teaching

The themes recurring in Monique's writing and talking about her teaching reflect the importance she places on the relevance of education and on personal and social responsibility. She expressed a need to

- make learning a living experience;
- prepare students to be worthwhile members of society;
- guide students and give coherence to classroom activities;
- help students become autonomous, self-aware, and self-appreciating learners;
- help students learn to accept responsibility for their actions;
- establish and maintain mutual trust and respect; and, above all,
- remain a professional.

Theory in Practice

Monique's commitment to her beliefs and goals was so strong that she decided on her first teaching assignment, based on the opportunities that would be provided her, to maintain what she called a "moral focus." Although she was qualified to teach both French as a second language and English and had job opportunities in both areas, she was hesitant about choosing to teach French for fear the subject might carry with it certain constraints. "I thought it over very carefully. Finally I said, 'I can't get enough of that [moral/social] focus in teaching French.'" So she opted to teach English where she thought she would have a better chance of putting into practice her beliefs.

> I think it's so important that students today learn to make decisions and live with them and be responsible for their actions and think about what they're doing in the world. In a lot of courses you don't get an opportunity to do that. That's why I chose English over French.... I think [students] should know where they stand on issues.

Monique was guided through her entire first year by her attitudes and beliefs about the importance of establishing mutual trust and respect and maintaining a professional image. At one point during the year she expressed frustration over the persistence of this struggle.

> I look young ... and they see me as their age and that's very difficult. It's very difficult to remain professional.... With some of the students I've managed to remain professional but with others I haven't so the entire atmosphere of the class is not professional.... I don't like it at all. I'm looking forward to my next class so that I can start right from the beginning to be professional using what I've learned.... It's very uncomfortable for me to be in a classroom and not be seen as a professional. I don't think my students are benefiting as much as they would if they saw me as a professional.... Classroom control stems from mutual respect. If you don't have that then learning can't happen because they don't see anything you do as important. They don't have enough confidence in you.

Reflecting aloud on her experiences of her first year she expressed particular satisfaction with her success at having ultimately achieved her goal of professionalism. "Finally, I do feel professional; but my idea of professional has changed.... Now I've realized that age doesn't have anything to do with it." The problems she had experienced with her grade 12 class and had attributed to the closeness in age of herself and the students, she discovered, were not age related in the sense that she initially thought. The problems were caused, rather, by her failure to "treat the students as mature adults." They were rebelling against her treating them as younger students. By "starting off differently" with the new class in the second term she was able to discover how to establish the mutual trust and respect she sought from the beginning. Treating them as adults also enabled her to help them "learn to accept responsibility for their actions" and to "help them be better prepared for the work world."

> My image of an unsmiling, straightforward, organized person in a business suit and carrying a briefcase is no longer my image of a professional. That's not what it is to be a professional in teaching. I've finally come to grips with that. I have finally shown people that I am a professional.

She did this by demonstrating her ability to establish and maintain a "wonderful" rapport with the students, showing her competence in her contribution to the school musical by "single-handedly costuming 66 kids and getting over 250 costumes free," having students come to her for advice and help, and even having a parent seek her advice. This last incident confirmed Monique's success. "I felt great. I thought, 'She must regard me as a professional even though I'm such a young pup.'"

Monique's overall impression of her first teaching experience was favorable, although in the beginning she was terrified. She thought all the students were going to be major discipline problems and that she wouldn't be able to control them, but it turned out to be much easier and better than she ever thought it would be. "It's just so fun to go to work in the mornings," she said.

> I think I've been successful with some students, making them all of a sudden realize how fun it can be to learn. That makes me very proud and happy. The students do like learning in my class. Some students whom I've never seen do anything at all before are starting to do the work. They're not bored in my class.... Maybe it's just this once but still they have understood what it's like and how thrilling learning can be.... Maybe later on in life they'll want to keep on learning.... Just what little bit they do enjoy, that's really important.

Monique has completed her first year satisfied with what she has been able to accomplish. She has been able to put into practice many of the ideals she had articulated in her preservice year and has reconstructed some of her understandings. Her perceptions of how she has begun to construct her practice suggest that she has not had much difficulty enacting her beliefs, attitudes, and goals. It is clear from talking with Monique that she is happy in her chosen profession and is likely to continue.

What factors have contributed to the satisfaction Monique has experienced this first year? Monique herself was instrumental in engineering her

own success with her choice to teach English over French. But there were several other factors that worked in her favor:

1. She had classes of reasonable size. The enrollment in each of her classes was less than 30; and the "general" level classes (which sometimes are comprised of particularly challenging students) each had less than 20 students;
2. Her department and the school she was in had a philosophy of education and approach to teaching that Monique understood and shared;
3. She had two periods for planning each day which she assumed made a big difference; and
4. She had a department head and other people in her subject area to whom she said she always went for advice and support. She said that she was encouraged at the first of the year to seek help from one of the experienced teachers in the school who would be her "mentor." And she regularly did.

> It's important to have an idea of what your goals are and what you believe in before you go into your first teaching job. That really helped me. I was lucky to get into a school that enabled me to carry out some of the things I wanted and to figure out some of the things I wasn't sure about. I think it's important to realize that every school is different. If I couldn't do what I wanted in that school, I'd move on until I found a school where I could grow.

Mary Ellen

Mary Ellen had a background in science and music and was interested in teaching at the upper elementary level (grades 4-8). She too enrolled in the preservice teacher education program immediately on completion of an undergraduate degree. Mary Ellen did not have a regular full-time teaching position her first year. Instead of having her own classroom she was hired for two consecutive terms (September to December and January to June) to replace two teachers on maternity leave. Her first assignment was a split grade 5/6 class in a small rural school; the second was in a large urban school teaching language arts and visual arts to two grade 3 classes of students enrolled in a French immersion program and music to three grade 1 classes in the school.

Mary Ellen had an exacting first year. But despite the concomitant difficulties of supply teaching and of having to leave one class halfway through the year to take over another class dramatically different in almost all respects, Mary Ellen put in long hours of hard work toward the realization of the objectives she had set in her preservice year. She was prescribed a double dose of the isolation, personal trauma, and professional hardship often experienced by first-year teachers. But despite frequent bouts of self-doubt and the considerable personal costs in time, energy, and social life, she was able to actualize many of the ideals she had articulated.

To understand why Mary Ellen found her first year to be so demanding, one must first be apprised of the key elements in her personal theory of teaching. With this knowledge and an awareness of the nature of her teaching assignments will come an explanation of the impact on Mary Ellen of her first year of teaching.

Mary Ellen's Beginning Personal Theory of Teaching

What is most important for Mary Ellen in order for meaningful learning to occur is to acquire

> a good knowledge of the students: how they learn, where they are at emotionally, socially and cognitively, what is relevant to them.... Each child is different and has different needs and sensitivities.... You have to be sensitive to them, to try and get to know them ... and see what kinds of things they like, what areas they feel strong in or don't feel strong in, find out what things they excel in.

Metaphorically, Mary Ellen describes teaching

> as gardening and the teacher as the gardener who tends to his or her plants in order to help them grow to their full potential ... helping them to develop healthy self-concepts and a sense of self-worth, and to help them learn meaningfully and have successful experiences.... Each child needs to grow, and grow strong.... You have to try to figure out what the needs of these plants are, how they can best grow and blossom.... When I think of a garden I think of the beauty of the plants and I feel that way about the students too. That's why I'm there, to plant and nurture and take care of them. Probably the most important thing to me about teaching is helping the kids to grow.

Theory in Practice

Getting to know the students is a time consuming and gradual process. In her first assignment Mary Ellen worked hard to do so. She arranged time and opportunity to interact with the students,

> talking to them and writing back and forth in their journals.... I try to get a dialogue going. I do intramurals so I get to see them at lunch time and I do student council and choir so I get to see them at those extracurricular activities. And in class when I can. Sometimes when we're conferencing in writing or reading I find out what they're interested in and [follow up on that].... Just listening to their conversations is another way to get to know them.

She was pleased when she was finally able to arrange the learning activities so that she could "stand back and observe them, watching how they work together and how they go about doing tasks."

All of this information and knowledge about the students helped Mary Ellen to design appropriate and meaningful learning experiences. As the first term progressed, so did Mary Ellen's satisfaction with her teaching. The better she got to know the students, the better she was able to meet their individual needs and differences, and the more comfortable and self-confident she became. By the time her first assignment ended just before Christmas, she felt that she was "really getting somewhere." She had designed and developed some individualized programs based on the students' particular interests and abilities and had finally been able to make gains in the establishment of the kind of "child-centered program" she had envisioned in her preservice year by arranging for special outings and guest speakers, and having students actively involved in their own learning.

And then, in the middle of the year, Mary Ellen was thrown into two new homeroom classes, which she saw for only one and a half hours each day, and three music classes which she saw three times a week. Taking on 138 new students caused Mary Ellen to have a "not so satisfying second term." "Not being able to get to know the students and consequently not being able to gear my program as accurately as I would like has been frustrating." Reflecting on the second placement she talked more about what she was not able to do with and provide for the students than what she had been able to accomplish. Although she was pleased with some of the learning unit activities she had developed, the individualized approach to language used in the school, and the potential of the program she was using with the students, she felt that she was somehow being negligent. "I feel guilty. I should be doing so much better for these kids. I'm not giving them what they should be getting." Certain that "some are falling through the cracks" she felt helpless but ready to assume responsibility for not having enough time with the students, for not knowing enough about how the writing system worked, and not knowing enough about teaching reading and language to primary children (even though she was prepared as a junior-intermediate teacher). Establishing rapport and forming a personal attachment with the students is important to Mary Ellen. She was unhappy about the lack of time and opportunity to do this. Even though only having to teach two subjects to her two homeroom classes meant that she had considerably less preparation to do, Mary Ellen expressed her wish for more time with the students, more opportunity to get to know them better "even if it means a lot more planning," and more opportunity to be spontaneous and responsive to their interests, "letting them direct where the learning will go."

Mary Ellen was pleased with the assistance and support she had been provided by colleagues in both schools and by the board. She had been assigned to an experienced teacher in the first school who spent considerable time with her, especially in the first week until the time commitment became too great and they had to stop their long after-school conversations. In the second school she and three other first-year teachers had formed a support group which met regularly to share ideas and concerns. She was particularly grateful for the monthly meetings of information sharing and support arranged during the first term for all teachers, both new to the profession and new to the board. She also felt supported and encouraged by the consultants who offered "a shoulder on which to cry."

Although the assistance and support were welcome, the circumstances of her teaching situation precluded many opportunities for Mary Ellen to experience success in her first year. The values and beliefs that needed expression in order for success to be achieved were restrained by circumstance. But despite the isolation, trauma, fatigue, and frustration Mary Ellen experienced in her first year, she remains committed to teaching and convinced that she had made the right career choice.

> I really like teaching. There are a lot of neat things about it that you wouldn't have anywhere else.... I don't think it's easy.... I'm probably a lot less idealis-

> tic.... There's a lot of work but I think it's worth it.... I have to think that all of this will make me a better teacher.

Elizabeth

Elizabeth, like Monique, wanted to teach French as a second language and English to intermediate/senior level students. Like the others, she enrolled in the preservice program directly following the completion of an undergraduate degree. Elizabeth was hired midway through the preservice program to teach French to kindergarten and grades 3 to 8 beginning the following September. Elizabeth's teaching situation in her first year was perhaps the most incongruous with the goals, ideals, and expectations she made explicit in her preservice year. The frustrations, disappointments, and difficulties she experienced are painfully evidenced in the contrast presented by her teaching ideals articulated through metaphor and the reality of her first assignment.

Elizabeth's Beginning Personal Theory of Teaching

> I am reminded of the English romanticist Shelley who likened the mind in creation to a fading coal that is enlivened and returned to its "transitory brilliance" by an "inconstant wind." As a teacher, I am the leader and source of inspiration in the classroom. I am the wind that propels the windmill. The students are the burning coals that brighten with inspiration as the wind hits them. Their intelligence is aroused when the inspiration moves them.... The wind generates the windmill and soon the windmill moves on its own with the help of the wind.... Without the driving force of the wind the windmill becomes stagnant and motionless. The wind gives the windmill a purpose to exist because without [it] it is helpless. The wind may change the windmill's pace through its varying strengths and weaknesses. Its gusts set the atmosphere for and endurance of the mill.... As the wind generates the mill, it propels itself with energy.... I [want] to inspire my students to be creative, imaginative, and self-motivated and to try to find their hidden thoughts of "transitory brilliance."

Theory in Practice

Elizabeth left the preservice program to begin her career as a French teacher. She was enthusiastic about her subject and about being a teacher. She was eager to get to know the children and help them discover themselves. She wanted to inspire them "to be creative, imaginative, and self-motivated and to try to find their hidden thoughts of 'transitory brilliance.'" She wanted to instill in them an appreciation of knowledge and a love of learning. She had the kind of ideals and attitude toward teaching and learning that we want all our graduates to have. She was committed to the profession and a career of lifelong learning and professional growth and was prepared for hard work and long hours, expecting frustrations, disappointments, and, like all beginning teachers, perhaps some difficulties in the area of classroom management and discipline.

Her first year did not turn out quite as she had anticipated. Placed in an especially challenging and demanding teaching situation for a first-year teacher, she was hardly able to do more than just survive. Teaching seven different classes in seven different classrooms meant that she was always in

someone else's room. Because she did not have a classroom of her own she had difficulty commanding respect from the children, "establishing herself" with them and with herself for that matter. They did not see her as their real teacher and that made classroom management and discipline even more difficult than it might ordinarily have been. She says,

> At times, I still feel like a student teacher because I still have someone else's classroom.... The students act up for the music teacher and the French teacher because we're not their "real" teachers. They have no respect for us. Their homeroom teachers are their "real" teachers.... And if you only have them for 40 minutes each day, well ... I have tried to be down to earth and on the level with the kids but it's different in this situation. They just act up. They look at me as being young and a new teacher and not their real teacher.

In addition to the problems brought about by her always having to travel from class to class, she felt severely constrained by the subject she was teaching. Despite wanting so much to "reach the children on a personal level," she felt that the requirements to, for example, speak French 80-90% of the time and to evaluate the children's language competence made impossible the kind of personal interaction she wanted to take place.

> The only time I can [get to know the students] is on yard duty or whatever. I can talk to them and find out about them that way.... I just don't have the opportunity [to get to know the children]. If I were to have a discussion [on an issue], for example, I could really only do it with the older grades. You can't build the kind of rapport you need.

Elizabeth was excited by the enthusiasm of the very young children but not hopeful that it would continue. "In kindergarten, they're so keen. It's all so new to them. As soon as they see me they say, 'Bonjour.' They're so keen. If they can only keep it up to enjoy French until they're older." Early in the year Elizabeth spent considerable time trying to think of imaginative ways to help the children maintain or in some cases rekindle their interest and enthusiasm for learning French. She tried to make her classes as exciting as possible with special activities at Christmas, and games and activities that she was certain they would enjoy. But despite this she wasn't really able to arrange the teaching-learning situations in the way she would have liked. She tried such methods as paired learning activities, but again, because of the demand for a teacher-directed approach, she was unable to do this as often as she wanted. As the year progressed and Elizabeth "became more realistic," the evenings previously spent planning until 9:00 or 10:00 were devoted to recreational activities that helped her "get her mind off it." "You know what you're doing tomorrow," she would tell herself, "so think of yourself for a change." It upset her so much that the parents and students did not share her enthusiasm for her subject that she developed what she called a "more realistic attitude."

> As much as you think you might really change things you can only really change them in a small way. If you've reached just one student, that's great, at least from my perspective now. I thought I was going to make the students love French. I'm leaving at the end of this year thinking, "That's hogwash!"

> I thought I could make a difference and now I'm finally starting to realize I can't.
>
> [The Faculty of Education] is marvellous. It's really ideal. But when you're really teaching it's not the ideal situation.... [The Faculty] is like the ivory tower: Everything you read in the textbooks is marvellous, you have your friends there after practicum, you have their support and can exchange experiences, and it's all very interesting. Once you're out on your own you realize that. This is it and it's real! ... Oh, you learn, you learn.

Elizabeth was given the opportunity to move at the end of the year to another city and another board of education. Her experience in her first year helped her decide to make the change. The prospect of moving to a high school was exciting to Elizabeth because it meant that she could teach at the level for which she was prepared. It also meant that she would have her own homeroom class and that she would be perceived as a real teacher. Because she was applying to teach mainly English (her major) and perhaps some French (her minor) she would have better opportunity to put into practice her personal theory of teaching.

Elizabeth had not given up completely. She held fast to her vision of teaching, her windmill metaphor, saying that she still believed strongly in the ideas she had articulated, but suggested that they would have to wait for practical expression in a more conducive teaching situation. "I still believe in it.... You have to generate the enthusiasm and you have to get things going and get the kids to participate.... But I think [my metaphor] must be more applicable to the English classroom." Next year, in another city, teaching a different subject to classes of older students she will try again. I hope Elizabeth's teaching situation in her second year will enable her to enact her beliefs and that she will find the renewed optimism and energy necessary to regenerate the windmill and enliven those fast-fading coals to their transitory brilliance.

Facilitating Teacher Development

Teacher knowledge, like teaching practice, is personal, complex, and context dependent. How teachers understand and go about their work is a function of who they are, what they believe in, what conceptions they hold, what they aspire to, and the nature of the environment in which they work and interact. If we assume that development takes place through a process of reorganization and reconstruction of existing knowledge and concepts and that teachers redefine their knowledge as they act and interact in their professional contexts, we can conclude that what takes place in preservice programs and in institutions in which new teachers are employed in the beginning years influences, in important ways, their development.

Feiman-Nemser and Buchmann (1986) argue that "effective teacher preparation needs to pay attention to the prior beliefs of candidates and also prepare them to learn from their teaching in ways that go beyond the typical trial-and-error approach and reliance on personal preference." They go on to suggest that teacher education can help prospective teachers understand their prior beliefs and dispositions and, if inadequate, can help to bring about

change (p. 2). Ross (1988) suggests that teacher educators help preservice teachers become more aware of their past experiences and preconceived beliefs about teaching "simply to expose individual beliefs to critical examination ... [so that they will learn] to engage in systematic analysis of their own curricular goals and methods" (p. 5). By encouraging beginning teachers to understand their implicit theories and beliefs we help them, as Polanyi (1958) suggests, to bring to light and affirm the beliefs implied in their thoughts and practices, discover what they truly believe in, and formulate convictions they hold (p. 267).

But if we hope, as Fullan and Connelly (1987) suggest, to reconceptualize and restructure teacher education and teacher development to more appropriately reflect the continuing and developmental nature of becoming a teacher and to more fully acknowledge the complexity and individuality of teaching practice, we must begin to think about how best to facilitate this process along the continuum. This means going beyond the preservice program to the classrooms and schools that receive new teachers. We need to begin to focus our attention on preparing a school context that is conducive to growth not endurance; that welcomes new teachers and helps them continue to engage in systematic reflection on and analysis of their teaching; and in which all the new teacher's energy in the early years of teaching is not spent just trying to survive.

The four teachers in this study began their careers in different settings and with different conceptions, expectations, and goals, and each experienced the first year of teaching somewhat differently. For Monique, the year was pretty much as she had envisioned. For the most part, she was able to put into practice her beliefs and ideals and to knowingly develop her understandings. Her classroom and her teaching were, by and large, what she hoped they would be. Monique was welcomed into a supportive teaching environment where she was given an appropriate and realistic assignment and where she felt sufficiently comfortable and confident to grow professionally. For instance, she was able to reconstruct her conception of one integral component of her personal theory—what it means to be a professional—a significant point in her development. She was lucky, she said, to get into a school that enabled her to carry out some of the things she wanted and to figure out some of the things she was unsure about, and she found it helpful to have a clear idea of her goals and beliefs before she started. As a result, she knowingly evidenced professional growth.

The others were not so fortunate. For a variety of reasons, Wendy, Mary Ellen, and Elizabeth experienced varying degrees of difficulty, frustration, disappointment, and success. They responded in different ways to the realities of their first year of teaching and their not being able to teach the way they thought they would or could. They all tried in the beginning to modify their situations to more accurately reflect their personal theories, attitudes, and beliefs. This proved more difficult for some than others. With time, effort, and resourcefulness Wendy was able to approximate her vision of her practice. Elizabeth finally became resigned to her situation and decided to put her ideals on hold, looking to the future for a better opportunity to enact

her beliefs. Mary Ellen too became "more realistic." After almost an entire year of what seemed to her like incessant fatigue, she finally gave in to her situation, temporarily reconstructing her views to be more congruous with her situation. Resignment, disillusionment, and frustration—not growth—characterized their first year of teaching.

All four teachers grew professionally in their first year, but the extent to which their potential for growth was realized was contingent on their practical situations. It is interesting and somewhat ironic that the vision they had of themselves as teachers could be used just as aptly to describe a vision of an ideal growth environment for them as learners. Wendy needed someone to *provide* for her; Mary Ellen needed *care and nurturing* to help her *grow*; and Elizabeth, herself a *fading coal*, needed to be *enlivened and returned to her state of transitory brilliance*.

It is well known that many new teachers lose the enthusiasm and energy with which they enter the teaching profession as they are coerced into exchanging their *ideals* for *reals*. Because the early years of teacher development are formative, schools and faculties of education must work together sharing a vision of and responsibility for teacher education; otherwise, programmatic restructuring in either context will remain limited in its potential to effect real change and improvement in teacher education. Teachers leaving preservice programs that have been restructured to promote career-long inquiry and growth must be received by schools and school boards who are prepared to support and facilitate the continuation of such practice. We in faculties of education must be careful not to prepare new teachers for teaching roles that do not now exist, or do not have the sanction of the institutions in which teachers now work (Zeichner & Liston, 1987). Change that is not shared might at best be futile and at worst be harmful to new teachers and a disservice to the children in their classes.

If teacher education is indeed to become a lifelong developmental process, preservice teacher education must become the official starting but not ending point of personal and professional inquiry. Inquiry into one's own practice begins with an explication and examination of the foundations on which the practice will develop. Skills in, habits of, and appropriate attitudes toward reflective practice introduced in the preservice program must be fostered throughout the formative years. The student teachers who participated in this study were given an opportunity to begin their professional education with an emphasis on self-inquiry. From an analysis of how they experienced their first year, it is possible to identify several factors or conditions that, given appropriate consideration, would have provided them and presumably other new teachers with the kind of professional environment that would enable and encourage rather than constrain and discourage their development. School leaders preparing to receive new teachers should give consideration where possible to the following areas:

- *assignment of classes*: class size; composition; curricular demands; consistency, as much as possible, with the level and subject area in which the teacher was prepared; and as far as possible, consistency and stability within and across class assignments;

- *assignment of physical space*; and for those new teachers who are not provided a classroom of their own, a special attempt to ensure that some *"real" space* is provided so that they can begin to develop a professional identity;
- provision of adequate *materials and resources*; new teachers have a limited base supply on which to build;
- provision of *planning time*; new teachers have limited experience in planning and for the most part are doing everything for the first time;
- provision of opportunities for new teachers to gain an *understanding of the school culture* and to *become socialized* to the norms and routines of the school;
- creating a *climate of support* with informal or formal designation of support teachers;
- provision of opportunities for new teachers to form *peer support groups* and to meet regularly with other new and relatively new teachers; and
- provision of opportunities for new teachers to *spend time with students* in non-teaching situations.

Note

1. A version of this paper was presented at the annual conference of the Canadian Society for the Study of Education, Quebec City, Canada, June 1989.

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A Comparative Study of Student Teachers' Feelings of Preparedness to Teach

Increasingly, the importance of a learner's feeling of self-efficacy with respect to a task is being recognized as an important prerequisite of success. This study focuses on student teachers' feelings of preparedness to perform tasks central to the role of the teacher and measured on the PREP Scale (Housego, 1990). Student teachers' feelings of preparedness to teach in the first term of a new teacher education program, September to December 1987, were compared with those of their counterparts at comparable points in the old program, September 1986 to April 1987. Feelings of preparedness to teach were monitored in secondary subject specialization, elementary program specialization, and gender-based as well as level of preparation (primary, intermediate, or secondary) subgroups. The Newman-Keuls method of pairwise comparison between means was used to determine which contrasts between subgroup means were significant. Both elementary and secondary student teachers' feelings of preparedness to teach increased significantly during the first term of both the new and the old teacher education programs. At the end of the first term, however, new program student teachers' feelings of preparedness to teach were significantly greater than those of old program student teachers at a comparable point in their program. At this point, new program student teachers' feelings of preparedness to teach were at a level not significantly different from that reached by old program students near the end of their teacher education program. For four of 10 new program subgroups—secondary art/music, secondary English/social studies/languages, elementary multicultural education, and elementary males—feelings of preparedness to teach did not increase significantly during first term. Contrasts were drawn with old program subgroup findings. Possible implications of the findings are discussed.

One of the important prerequisites of successful teaching is preparation and confidence in one's preparedness. This study compares the feelings of preparedness to teach of student teachers in a new teacher education program with those of their counterparts at comparable points in the old program.

What does feeling prepared mean? Words like confidence and readiness come to mind. Bandura (1986, p. 391) described the "judgment of one's capacity to accomplish a certain level of performance" as an important individual personal characteristic or disposition which he labeled "self-efficacy," a term also probably related to feeling prepared. In an earlier work (1981, pp. 205-209), he explained that self-efficacy may stem from enactive sources (based on performance achievements), vicarious sources (based on observing models), persuasory sources (based on verbal persuasion by others), and emotive sources (based on physiological arousal). In his view, enac-

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tive sources are most important; however, subjects with little experience who therefore lack direct knowledge of their capacities may derive self-efficacy to a greater degree from vicarious sources.

Self-efficacy, one's judgment about one's capacity to perform particular behaviors, is a personal characteristic or disposition which functions in a reciprocal deterministic relationship with both the behavior itself and the environment in which it occurs (Bandura, 1978). Explaining this statement and applying it to a student teacher's experience, self-efficacy with respect to performing teaching behaviors is a personal disposition which is modified by and also modifies his or her teaching behaviors. Self-efficacy also affects and is affected by the educational environment in which the student teacher functions. Theoretically, greater feelings of self-efficacy with regard to teaching lead to improved teaching behaviors which in turn contribute to a richer teaching and learning environment. As well, proceeding in the opposite direction, a richer educational environment may stimulate a broader, more effective set of teaching behaviors to which pupils may respond with improved motivation and achievement and thereby augment a student teacher's self-efficacy regarding teaching, a personal cognitive disposition. Each component in the three-part model plays a role in shaping the other two components. According to Bandura (1978, p. 345), psychological functioning "involves a continuous reciprocal interaction between behavioral, cognitive and environmental influences." Theoretically, therefore, self-estimates of one's capacity to perform specific teaching tasks can be seen as an important cognitive influence on teaching behaviors and on the educational environment. Bandura (1977, p. 191) hypothesized that self-efficacy "determines whether coping behavior will be initiated, how much effort will be expended, and how long it will persist in the face of aversive experiences." This hypothesis has been interpreted, tested, and supported in a variety of educational contexts (Ashton & Webb, 1986).

Student teachers might be expected to derive self-efficacy feelings regarding teaching from successful teacher education experiences—experiences which provide opportunities to tap all four types of self-efficacy sources: enactive, vicarious, persuasive, and emotive. Were this so, they would be unlikely to say, as many practicing and student teachers have, that their teacher education programs did not serve them well or that only the field component was really relevant (Carter & DiBella, 1982; Lanier & Little, 1986). In this study a student teacher's self-efficacy regarding teaching, his or her "judgment of [his or her] capacity to accomplish a certain level of performance," (Bandura, 1986, p. 391), is described in terms of feelings of preparedness to teach, estimates of how well prepared the student teacher feels to perform a selection of tasks for which teachers are responsible. Being motivated is presumably an aspect of feeling prepared as well as a part of self-efficacy. The degree of emphasis may vary.

Feeling prepared to teach might be assumed to be important to the execution of successful teaching, just as feeling prepared to sing or to run a marathon is important to the successful completion of those behaviors. From the perspective of Atkinson's (1964) expectancy motivational theory, feeling

prepared to teach can be seen as a perceived probability of success. In Atkinson's equation the perceived probability of or chance of success is multiplied by the incentive value of success to determine motivation. Feeling prepared to teach can therefore be seen to be an important aspect of the motivation of student teachers along with the incentive value attached to teaching. A student teacher's acquisition of feelings of preparedness to teach can be explained in the same manner as the acquisition of feelings of self-efficacy (Bandura, 1981). Opportunities to teach in laboratory settings and in classrooms provide an enactive source of feelings of preparedness to teach. When a student teacher observes others teaching and envisions himself or herself in that role, experiencing its rewards indirectly, the experience is a vicarious source of feelings of preparedness to teach. Persuasive sources of feelings of preparedness to teach come into play when the student teacher is literally persuaded by others that he or she can be a successful teacher. In a teacher education program, faculty advisors, sponsor teachers, and fellow students provide such encouragement. Finally, student teachers tap emotive sources of feelings of preparedness to teach. There is an excitement (often anticipation, sometimes fear) produced by an approaching period of school practice as well as happiness over success.

In the context of a teacher education program it is possible to promote the development of student teachers' feelings of preparedness to teach, capitalizing on all four types of sources. For example, because enactive sources are the prime sources of feelings of preparedness, it is necessary to ensure that student teachers have successful laboratory and field experiences. Questions as to the appropriate type of teaching assignment, the duration of the assignment, the sensitive supervision of field experience (Housego & Boldt, 1985), and the compatibility of student teachers and their supervisors must be addressed. If a student teacher has opportunity to observe effective teaching, vicarious sources of feelings of preparedness to teach will be richer. The need for effective faculty teachers and sponsor teachers to serve as role models becomes apparent. Persuasive sources of feelings of preparedness must also be evaluated. More persuasion, unless it is warranted and in the form of genuine feedback, is not necessarily better. What about mixed messages? A coordinated approach to providing feedback may be sought, for example, in the form of three-way supervisory conferences (sponsor teacher, faculty advisor, and student teacher). Thinking of emotive sources of feelings of preparedness to teach, one recognizes the importance of a smoothly operating, well-organized teacher education program in which expectations are clearly indicated and communication is generally good, thus avoiding the frustration experienced by students who don't know what to expect, how and when to prepare, and how they will be evaluated.

University of British Columbia teacher education programs have recently been revised in order to improve, standardize, reorder, and lengthen the educational experiences of student teachers and streamline the administration of programs. As shown in Table 1, program modifications include a generic teaching skills course with large-group lecture and small-group laboratories, a developmental practicum sequence culminating in a 13-week

Table 1
Brief Description of Curriculum for Two Programs

	Old Programs Secondary and Elementary	New Programs* Secondary	 Elementary
Term 1 (Sept. - Dec.)	Courses (some extend beyond one term)	Courses	Courses
	Educational Psychology (development, learning and measurement)	Principles of Teaching (lecture and lab)	same
	Educational Studies Elective (history philosophy, sociology or social foundations).	Analysis of Education	same
	Education Electives	Education during Adolescent Years	Application of developmental theories
	Curriculum and Instruction elementary - all subjects secondary - concentrations	Curriculum and Instruction - major and minor areas	Communication skills(2 weeks)
	October (3 weeks practicum)	10 weekly half days & 2 week practicum	10 weekly half days
Term 2 (Jan. - Apr.)	coursework continued	Courses	Courses
	February (4 week practicum)	Communication skills (2 weeks)	Curriculum & Instruction courses in all areas
			2 week orientation practicum
			Educational psychology (early or middle childhood)
		13 week practicum (Jan-Apr.)	
Term 3 Sec. (May-Aug.) Elem. (Sept.-Dec.)	May (3 week practicum)	Courses School organization	13 week practicum (Sept.-Dec.)
		Learning & Measurement	
		Educational Studies Elective	
		Other electives	4th term (Jan.-Apr.) similar to secondary 3rd term

*Some changes have been made in these designs since1988.

extended practicum, time to permit a laboratory approach in curriculum and instruction courses, and a communications course. A program to prepare faculty and sponsor teachers as supervisors of student teachers has also been implemented.

Program revision was carefully planned by an across-departments faculty committee, debated and approved by the whole faculty, and subjected to the scrutiny of the wider university community, practicing teachers and administrators, and their professional organizations. All the program changes might be expected to enhance student teachers' feelings of preparedness to teach. Increased feelings of preparedness to teach on the part of clientele in a teacher education program may be seen as an indicator, possibly a basic indicator, of the successful functioning and/or improvement of a teacher education program. In other words, because the intent of program revision was to improve the preparation of preservice teachers; to expose them to more controlled, standardized, carefully planned, and uniformly supervised coursework; and to involve them in more hands-on laboratory type preparation for an extended period of time, one might expect them to feel better prepared to teach than their predecessors.

To establish a baseline level of student teachers' feelings of preparedness to teach, students in the last offering of the one-year baccalaureate program in 1986-1987 (the old program) were asked to indicate at points prior to each of three short practica (October, January, and March) the extent to which they felt prepared to perform a set of teaching behaviors (Housego, 1990). These behaviors were identified by an interdepartmental faculty committee as fundamental to teaching and worthy of inclusion in the first basic course in a professional teacher education program. The calendar description for this course entitled "Principles of Teaching" includes, "introduction to principles and instructional procedures related to classroom management instructional planning, and the assessment of learning as applicable across grade levels and subject matter fields " (Office of the Registrar, 1987, p. 283). The development of feelings of preparedness to teach was monitored in the total group and in various program and subject matter specialization subgroups. In addition, the tasks for which students felt most and least prepared and the tasks for which feelings of preparedness increased most and least over the duration of the program were identified (Housego, 1990).

Similarly, students in the first offering of the revised program (the new program) were asked to estimate their feelings of preparedness to perform the same tasks several times during their teacher education program. This study reports the development of new program student teachers' feelings of preparedness to teach in the first term, September to December 1987, contrasting, as in the previous study, the scores of program and subject specialization subgroups with one another and making appropriate comparisons, when possible, with old program findings. Arising out of a basic question as to whether student teachers' feelings of preparedness to teach were related to their teacher education programs, three specific research questions were asked:

1. Did student teachers, on entering the new program, feel as well prepared to teach as their old program counterparts at or near the entry to their program?
2. Did new program student teachers feel as well prepared to teach at the end of first term as their old program counterparts at a comparable

point in their program? Were there significant increases in their feelings of preparedness to teach during the term?

3. Were there differences in feelings of preparedness to teach initially or at the end of the first term among new program student teacher subgroups identified by:
   a. grade level selection (primary, intermediate or secondary)?
   b. secondary subject specialization?
   c. elementary program specialization?
   d. gender?

   Did feelings of preparedness to teach increase significantly for these subgroups during the term? Were there similar findings for old program subgroups?

Method

Subjects

Elementary and secondary student teachers enrolled at the University of British Columbia in the new teacher education program participated in this study from September to December 1987. All the secondary subjects were graduates of other faculties, and most of the elementary subjects also held degrees, although they were admissible with only three years of prior arts or science coursework.

The secondary student teachers' specialization areas, on the basis of which feelings of subgroups' preparedness to teach were compared, included mathematics, science, business education, home economics, English, social studies, language, music, art, and physical education. Elementary student teachers were not identified as subject matter specialists, but by program specialization. They all enroll in either the early childhood (primary) or the middle childhood (intermediate) program, and, in addition, they may or may not choose to pursue programs in special education, multicultural education, or French education. Feelings of preparedness to teach were compared across secondary subject specialization subgroups, elementary program specialization subgroups, levels of preparation subgroups (primary, intermediate, and secondary), and elementary and secondary gender-based subgroups.

Table 2 shows the total number of responses in each of two data collections from secondary student teachers identified by subject matter specialization and by gender. Table 3 shows the total number of responses in the two data collections from elementary student teachers identified in two ways: by program specialization or lack thereof (one group is a no-specialization subgroup), and by gender.

In September 90.5% and in December 88.4% of the elementary student teachers participated. Secondary participation was lower, 84.6% in September and 78.1% in December.

The Scale

The Student Teachers' Feelings of Preparedness to Teach Scale (PREP Scale) was designed to measure the degree to which student teachers felt prepared to perform a set of tasks outlined by an 11-member interdepartmental faculty committee as core in a teacher education program and ap-

Table 2
New Program Secondary Student Participation by Subject Matter Specialization and Gender: September and December 1987

Subject Specialization	Month	
	September	December
Math, Science, Bus. Ed., or H.Ec.	40	29
English, Social Studies, Languages	21	20
Art or Music	13	15
Physical Education	9	9
Total	83	73
Gender		
Female	38	38
Male	45	35
Total	83	73

plicable across grade levels and subject matter fields. It consists of 43 items, each stated so as to complete the sentence, "I feel prepared to ..."

In repeated administrations the scale has been found to be highly reliable (between 0.95 and 0.97 based on Hoyt's coefficient, an index of item homogeneity) and valid for the purpose of this study (Housego, 1990). In an effort to ensure the content validity of the scale, items were developed to address the content of the Principles of Teaching course. Also, factor analysis was employed to determine how well the items represented the content areas of the course. In order to be sure the items discriminated among respondents perceiving varying degrees of feelings of preparedness to teach, their dis-

Table 3
New Program Elementary Student Participation by Program Specialization and Gender: September and December 1987

Subject Specialization	Month	
	September	December
Early Childhood (Primary)	32	35
Middle Childhood (Intermediate)	54	49
Total	86	84
No Specialization (beyond above)	43	43
Special Education	13	13
Multicultural Education	19	16
French Education	11	12
Total	86	84
Gender		
Female	63	58
Male	23	26
Total	86	84

crimination indices (item-total score correlation coefficients) were scrutinized. Eighty-eight percent exceeded .50.

Administration and Scoring

Student teacher participation in this study was requested and data were collected during the first class of the Principles of Teaching course in September 1987 and in one of the last class meetings in early December 1987.

The 43 PREP Scale items were scored on a five-point scale anchored on one end by "very well prepared" and on the other end by "very poorly prepared." Responses were assigned from 1 to 5 points, *low scores indicating greater preparedness.* The scores reported in Tables 4 to 8 are the averages over the 43 items for particular groups and subgroups of student teachers at various points in their teacher education programs.

Report and Discussion of Findings

The findings of this study are presented in six subsections: Whole Group: Program Entry Findings (September); Whole Group: First-Term Findings (December); Comparison of Primary, Intermediate and Secondary Subgroups; Comparison of Secondary Specialization Subgroups; Comparison of Elementary Program Specialization Subgroups; and Comparison of Gender Subgroups.

Whole Group: Program Entry Findings

As a whole group, new program student teachers on entry to the program in September felt as well prepared to teach as old program student teachers did at a comparable point. Table 4 shows the PREP mean score at 3 points in the old program and the beginning and end of the first term of the new program. In answers to research question 1, there was no significant difference between the mean PREP score of new program student teachers in September and that of old program student teachers in early October ($F=.20$, $df=1/384$, $\alpha=.05$).

When the new program began, secondary student teachers felt adequately (midpoint on the 5-point scale) or more than adequately prepared to perform

Table 4
Mean Scores on PREP Scale in Two Programs

Old Program			New Program		
Month	Mean*		Month	Mean*	
October	125.8	(21.4) +	September	124.8	(22.9)
January	110.7	(22.5)	December	104.3**	(20.8)
March	99.5	(25.2)			

+ Standard deviations are included in parentheses.
*The differences between the mean scores within each program are significant at $\alpha = .01$ level, smaller scores indicating greater feelings of preparedness.
**At the $\alpha = .05$ level, this score is significantly different from the January score but *not* significantly different from the March score.

the tasks presented in 24 of 43, and elementary student teachers for the tasks presented in 22 of 43 scale items. A similarly high level of confidence was expressed by old program student teachers who felt adequately or more than adequately prepared to perform 28 or 43 tasks by early October. Book, Byers, & Freeman (1983) also found that student teachers generally exhibit a somewhat surprising level of early confidence in their abilities to teach. One might expect inflated estimates of preparedness for activities with which people have limited familiarity (Bandura, 1986). That is, in both the old and the new programs, feelings of preparedness to teach may have been overestimated because they drew more on vicarious than on enactive experiences, although some students do enter the faculty with community teaching or supervisory-type work experience with children or adolescents, and everyone has gone to school.

Whole Group: First Term Findings

By the end of December, new program student teachers felt significantly more prepared to teach than their counterparts in the old program felt in late January. Answering research question 2, the December mean PREP score for student teachers in the new program was significantly different from the January mean PREP score of old program student teachers ($F=6.37$, $df=1/296$, $\alpha=.05$). What is more striking, the December mean PREP score of new program student teachers was *not* significantly different ($F=3.35$, $df=1/296$, $\alpha=.08$) from that of old program student teachers in March when, except for a final three-week practicum, they had completed their teacher education programs. In other words, new program student teachers felt almost as well prepared to teach after three months as old program student teachers did after more than six months.

One might speculate as to why such differences across programs occurred? The new program design attempts to ensure a more consistent, thorough coverage of basic teaching tasks in lecture and in laboratory practice and discussion. One might interpret this as an attempt to create and utilize enactive as well as vicarious sources of feelings of preparedness to teach. Both programs featured some early school experience. In the old program, student teachers engaged in a three-week practicum with expectations that they achieve 50% teaching time. In the new program, student teachers spent 10 half-days in schools either mentoring an individual or a small group in a learning enrichment mode, or tutoring small groups in the regular classroom on a weekly basis. It would be difficult to say that one or the other practical experience would be more likely to produce greater increases in student teachers' feelings of preparedness to teach. The old program provided a slightly greater amount of early classroom experience, whereas working with individual learners or small groups may have enabled new program student teachers to be more reflective than old program student teachers were able to be during whole-class instruction. Further, all of the old program student teachers completed some methods courses before the January data collection point. This was also true of the secondary new program, although not of the elementary new program student teachers. To

the degree that methods courses enhance feelings of preparedness to teach, the elementary new program student teachers might be seen to have had less opportunity to develop such feelings.

Comparison of Primary, Intermediate, and Secondary Subgroups

Do primary student teachers feel more prepared to teach because they teach less difficult concepts? Do secondary student teachers feel more prepared to teach because they work largely in subject areas in which they hold degrees? Research question 3a focuses on differences in feelings of preparedness to teach across subgroups of student teachers by grade level of preparation.

For ease of comparison of subgroups based in turn on level of preparation, subject specialization, program specialization, and gender, it was decided to carry out in each instance a one-factor, fixed-effects analysis of variance permitting comparisons of subgroup means both in months and across months.

Using the Newman-Keuls method of pairwise comparison between means, it was determined that there were no significant differences at the $\alpha = .05$ level in the September means or the December means ($F = 15.23$, $df = 7/488$, $p < .001$) of subgroups of student teachers based on grade levels of preparation, (elementary, including primary and intermediate, and secondary). There were significant and somewhat uniform increases in feelings of preparedness to teach for each of the four subgroups across the first term (from September to December). These might be attributed to the common experiences, redesigned standardized courses, laboratory and field type components, and systematic feedback provided in the program.

Because no analysis of feelings of preparedness in the old program was made according to grade level of preparation, no program comparisons were made.

Comparison of Secondary Subject Specialization Subgroups

Is it a different task to teach mathematics or science than it is to teach in the area of the humanities or fine arts? Would a specialist in one of these areas be likely to feel more prepared to teach than a specialist from another? Secon-

Table 5
New Program Mean + Scores on PREP Scale by Level of Preparation

Level of Preparation	Month			
	September		December	
Primary*	128.8	(19.6)**	104.9	(21.0)
Intermediate*	124.5	(27.9)	106.0	(20.3)
Elementary (Total)*	126.1	(25.1)	105.6	(20.5)
Secondary*	123.4	(20.4)	102.9	(21.3)

+ Smaller scores indicate greater feelings of preparedness.
*A comparison of means showed that the differences between September and December means for these groups were significant at less than $\alpha = .01$ level.
**Standard deviations are included in parentheses.

Table 6
New Program Mean Scores + on PREP Scale by
Secondary Subject Specialization Subgroups

Subject Specialization	Month			
	September		December	
1. Math, Science, Bus. Ed., or H.Ec.*	125.6	(18.7)**	105.9	(20.2)
2. English, Social Studies, Languages	118.4	(23.1)	102.2	(22.9)
3. Art, Music	119.4	(20.5)	102.3	(24.2)
4. Physical Education*	131.4	(20.2)	95.8	(17.3)

+ Smaller scores indicate greater feelings of preparedness.
*A comparison of means showed that the differences between the September and December means for these groups were significant at less than the $\alpha = .01$ level.
**Standard deviations are shown in parentheses.

dary subject matter specialization subgroups 1, 2, 3, and 4 included, respectively, mathematics, science, home economics, and business education students; English, social studies, and languages students; art and music students; and physical education students. The combination of some subject areas increased the size of subgroups for comparative purposes (home economics and business education students were few in number). Also, the combinations paralleled the groupings in the previous study (Housego, 1990) and represented, to a large degree, the organization of departments in the faculty.

Using the Newman-Keuls method of pairwise comparison between means, it was determined that there were no significant pairwise differences at the $\alpha = .05$ level in the September means or the December means ($F = 6.11$, $df = 7/148$, $p = < .001$), indicating therefore, in response to research question 3b, that no secondary subject specialization subgroup felt significantly more or less prepared to teach than any other, either at the outset of the program or at the end of the first term. Again, this might be at least partially attributed to the previously described consistencies of the new program. In the old program, secondary art and music student teachers felt more prepared to teach early in the program than their counterparts in mathematics, science, business education, and home economics, and at the end of the program they felt more prepared to teach than their counterparts in English and social studies.

There were, however, significant differences between the September mean and the December mean for subgroups 1 and 4, indicating that those two subgroups, mathematics/science/business education/home economics, and physical education, respectively, increased significantly in feeling prepared to teach in first term. This was not so for subgroups 2 and 3, English/social studies/languages and art/music. In September these two subgroups comprised 41% and in December 48% of the total secondary group. It is difficult to know why they did not come to feel increasingly well prepared to teach in that period and particularly why art and music student teachers, who in the old program felt more prepared to teach both initially and at the

end of their program than some of the other subgroups, should have been in that category. Some art and music student teachers and faculty expressed concerns about the difficulty of applying the generic skills course content on planning and instruction in their fields. Perhaps student teachers in these areas were exposed to some conflicting points of view in subject specific methods courses.

By contrast to other subgroups of student teachers, the physical education subgroup made impressive gains in feeling prepared to teach. Its PREP Scale mean score increased by nearly a full point on a five-point scale as contrasted to about half that amount for other subgroups. The generally positive response of pupils to physical education may stimulate greater feelings of preparedness in student teachers, an example of the functioning of the previously explained reciprocal deterministic model (Bandura, 1977). Also, in their first degrees or in community work, physical education students often engage in teaching and, therefore, may be able to draw on enactive sources of feeling prepared to a greater degree than student teachers who have no previous teaching experience.

Comparison of Elementary Program Specialization Subgroups

Questions can be raised regarding the possible relationship between program specialization as well as subject matter specialization and feelings of preparedness to teach. Elementary student teachers had the option of enrolling in one of three programs: special education, multicultural education, or French education. About half of them chose to do so; the remaining students constituted a no-specialization subgroup.

Again, on the basis of a one-factor, fixed-effects analysis of variance ($F=6.04, df=7/162, p<.001$), the null hypothesis of no significant differences among subgroup means was rejected at the $\alpha=.05$ level of significance. Using the Newman-Keuls method of pairwise comparison among means, it was determined that there were no pairwise differences significant at the $\alpha=.05$ level in the September or the December mean scores shown in Table 7, thus indicating in response to research question 3c, that no new program elementary program specialization subgroup felt any more prepared to teach than any other, either initially or at the end of first term. There were, however, significant differences between the September and the December means for three of four subgroups, the exception being the multicultural education subgroup, which did not experience a significant increase in feeling prepared to teach during the term. This result was similar to that found in the old program in which multicultural education student teachers, both midway through and near the conclusion of their program, felt significantly less prepared to teach than their counterparts in the no-specialization subgroup. In both the new and old programs, elementary multicultural education student teachers may have felt somewhat discouraged by the enormity of the task of meeting the needs of so many cultural groups in school settings in which class sizes were large and resources limited. One Vancouver high school, for example, enrolled students with 54 first languages other than English. The multicultural education program draws together students who

Table 7
New Program Mean Scores + on PREP Scale by
Elementary Program Specialization Subgroups

Program Specialization	Month			
	September		December	
1. Special Education*	135.6	(23.0)**	106.8	(23.9)
2. Multicultural Education	124.9	(23.5)	113.1	(24.6)
3. French Education*	134.4	(27.7)	103.3	(13.9)
4. No Specialization*	121.6	(25.1)	103.1	(19.2)

+ Smaller scores indicate greater feelings of preparedness.
*A comparison of means showed that the differences between the September and December means for these groups were significant at less than the $\alpha = .01$ level.
**Standard deviations are shown in parentheses.

have an interest in working with children from various cultural backgrounds. Perhaps these student teachers estimated their feelings of preparedness to teach in the context of working primarily with such pupils and therefore envisaged greater difficulty. They were about to begin second term, subject-specific methods courses in which their special needs would be addressed in exclusively multicultural education sections. Perhaps feelings of preparedness to teach could be expected to increase to a greater degree in second term.

Comparison of Gender Subgroups

Female teachers have been found to express higher personal teaching efficacy than male teachers (Cavers, 1988; Evans & Tribble, 1986). These findings prompted speculation about a possible relationship between gender and feelings of preparedness to teach, although the same question was not asked regarding old program student teachers. Research question 3d asked whether one gender subgroup of elementary or of secondary student teachers felt significantly more prepared to teach initially or at the end of first term and whether both male and female elementary and secondary student teachers increased significantly in feeling prepared to teach during the first term.

Once more, on the basis of a one-factor, fixed-effects analysis of variance, ($F=11.01$, $df=7/318$, $p<.001$), the null hypothesis of no significant differences among subgroups of means was rejected at the $\alpha=.05$ level of significance. Using the Newman-Keuls method of pairwise comparison among means, it was determined that there were no significant pairwise differences at the $\alpha=.05$ level in the September means or in the December means displayed in Table 8, thus showing that no elementary or secondary gender subgroup of student teachers felt more or less prepared to teach than any other at the outset of the program or at the end of first term. This consistency did not hold with regard to increases in feeling prepared to teach during the term. Only gender subgroup 4, the elementary male student teachers, did not experience a significant increase in feeling prepared to teach in first term. Perhaps this finding can be linked to the impression that elementary teaching is a more feminine than masculine occupation (Apple, 1987; Rosenfeld &

Table 8
New Program Mean Scores* on PREP Scale by Gender Subgroup

Gender Subgroup	Month			
	September		December	
1. Secondary Female*	124.2	(19.1)**	102.5	(22.0)
2. Secondary Male*	122.8	(21.7)	103.3	(20.9)
3. Elementary Female*	129.1	(24.3)	104.5	(21.0)
4. Elementary Male	118.0	(25.9)	108.0	(19.4)

+Smaller scores indicate greater feelings of preparedness.
*A comparison of means showed that the differences between the September and December means for these groups were significant at less than the $\alpha = .01$ level.
**Standard deviations are shown in parentheses.

Stephan, 1978). Depending on how male elementary student teachers view "women's work" and how they estimate their capacity to do it, one might expect their feelings of preparedness to vary. Both initial overestimates of feelings of preparedness and real difficulty in performing the tasks could have contributed to the no gain result.

Limitations

Measuring student teachers' feelings of preparedness to teach does not yield answers to questions regarding their actual teaching performances. Nor does it provide information concerning possible related improvements in pupil achievement; indeed, a student teacher's feeling prepared to teach does not ensure that he or she is well prepared to teach. The foregoing are limitations of this study, some of which are being addressed as the project proceeds. For example, PREP Scale scores are being matched with practicum evaluation records of teaching strengths and weaknesses. In this study, few student teachers felt poorly prepared with respect to any scale item. It seems that the lower level of feelings of preparedness to teach may have limited application. It may be that student teachers with limited classroom experience lack the standards and knowledge regarding effective teaching which would enable them to understand the meaning of being poorly prepared or very poorly prepared to teach.

There were at least two problems in establishing parallelism on the basis of which to compare the old with the new teacher education programs. First, the times of data collection were not entirely synchronized. In the previous program, student teachers were asked to estimate their feelings of preparedness just prior to each of three short practica (October, January, and March). In the present study, estimates of preparedness to teach were collected in early September, at the beginning of the program, and in early December at the end of the first term. Comparisons were made between new program September estimates and old program October estimates and between new program December findings and old program January findings. This was not a perfect fit; however, any advantage in the comparison process was in the direction of the old program.

A second problem related to the similarity of the participants in the two programs. Student teachers in the present study were graduates of other faculties, as were the subjects of the previous study. It is not known whether the offering of a new teacher education program, or for that matter, the final offering of an old and shorter teacher education program attracted students who were in some manner unique.

Finally, there were limitations concerning the generalizability of the findings of this study to other subjects in other locations and at other times.

Summary of Findings

In summary, the three research questions were answered as follows:

1. There were no significant differences in feelings of preparedness to teach between the total groups of new and old program student teachers at or near the entry to their respective programs.
2. At the end of first term, new program student teachers felt significantly more prepared to teach than old program student teachers did, with an additional month of teacher education and a three-week practicum. During first term, like their old program counterparts, they experienced a significant increase in feeling prepared to teach.
3. No subgroup of new program student teachers felt significantly more prepared to teach than any other related subgroup either initially or at the end of first term. Among old program subgroups, however, secondary art/music and also English/social studies student teachers felt significantly more prepared to teach than student teachers in some other subgroups at the time of the first data collection. Old program elementary multicultural student teachers also felt less well prepared to teach than some other subgroups.

Feelings of preparedness to teach did not increase during the first term for four subgroups of new program student teachers: secondary English/social studies/ languages; secondary art/music; elementary multicultural education; and elementary males. Old program multicultural education student teachers also experienced no significant increase in feeling prepared to teach between the first and second data collections.

Implications for Teacher Education

One implication of this study related to the teacher education program changes which were implemented at UBC. It may be speculated that the significantly improved feelings of preparedness to teach evident in the total group of new program student teachers by the end of first term, and the fact that they felt almost as well prepared to teach after three months as the old program student teachers did after six months of teacher education, comprise a modest affirmation of the teacher education program changes which have been made: the addition of a generic teaching skills course; increased laboratory-type, hands-on experiences; a developmental practicum beginning with half-days of working with individuals or small groups of learners; a communications course; and faculty and sponsor teacher training in the analysis of teaching and the supervision of student teaching. Although it may be suggested that this difference between feelings of preparedness to teach in

one program as contrasted with the other can be accounted for by a variety of other factors, the case for its being attributable to the previously described substantial program changes seems as credible if not more credible than most. For example, the claim that the finding is due to the newness of the program, a so-called halo effect, can be countered with the equally plausible argument that because the changes did result in some first-run administrative difficulties and there were mixed reactions to the program from the field and from faculty members, the production of a "horns effect" was equally likely. Students were regularly asked to critique their experiences and possibly thereby encouraged to see themselves as guinea pigs, expect problems, and become more anxious. At the very least, though, student teachers appeared to be assigning some face validity to their experiences, and greater confidence in their abilities to teach may enable them to accept and reflect on the feedback provided by sponsor teachers, faculty advisors, and pupils and make appropriate changes in their teaching behaviors.

The importance of focusing on specific teaching skills in a teacher education program is a further implication underscored by Green and Miklos (1987, p. 31) who recently studied the responses to their teacher education programs of Alberta teachers with two or three years of experience, finding that fewer than 10% of the subjects identified the development of specific teaching skills as a program strength, while more than 25% identified lack of emphasis on the development of specific teaching skills as a program weakness. Perhaps the subgroups of UBC student teachers who did not come to feel increasingly well prepared to teach in a term might have done so had more attention been directed to the acquisition of specific skills, especially in the laboratory accompanying the generic skills course.

A further implication relates to student course load. Despite the fact that secondary student teachers were enrolled in specific subject methods courses in first term and elementary student teachers were not, more secondary students did not increase in feeling prepared to teach. Their full calendar year program may have been more concentrated and anxiety producing than the elementary program which extends over two university years.

Another implication of this study relates to the situation of male elementary student teachers. Their lack of progress in coming to feel better prepared to teach during the first term raises questions about their responses to teacher education. It is widely recognized that many children do not have as much access to male role models as might be desired in their socialization. Certainly few of their primary teachers are male. Strategies need to be developed for making male student teachers who express an interest in primary teaching feel that it is indeed an appropriate vocational choice for men.

In conclusion, the findings of this study may be interpreted as underscoring the need for teacher educators to establish a sense of belonging to, sharing the goals of, and supporting their particular programs and communicating these feelings to student teachers. Similar factors have been shown to influence the achievement of students in both elementary and

secondary schools (Mortimore & Sammons, 1987; Rutter, Maughan, Mortimore, & Ouston, 1979).

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A Comparison of Average and Poor Readers in Their Recall Performance, Strategy Use, and Metamemory

Two experiments were performed to examine the extent to which spontaneous cognitive strategic behavior and metacognitive knowledge may be implicated in reading. The subjects were 25 average readers and 23 poor readers at the grade 4 level. Experiment 1 employed a multiple classification design to compare the recall performance of the two groups under intentional and unintentional memory conditions. The only significant effect was the memory condition main effect, confirming the superiority of conscious strategic processing in memory functioning but revealing no between-group differences in inferred management behavior. In experiment 2, strategic behavior and general metamemorial knowledge were assessed directly in addition to recall performance. While the average achievers were relatively superior in strategy use and metamemory, both groups of children manifested a production deficiency and a generally low level of strategic sophistication. Across groups, significant intercorrelations were found among strategy use, metacognitive knowledge, and recall performance, although among the poor readers the metacognition-recall performance link was weak.

Understanding the basic components of the learning process is a necessary prerequisite to understanding individual differences in learning. Memory and strategic behavior are two major components of the learning process. The ability to remember information is essential for learning to take place; consequently, the role of strategic behavior in enhancing memory and learning in general has received increased attention among psychological researchers over the last two decades. For example, Torgesen and his associates (e.g., Torgesen, 1977a; Torgesen & Goldman, 1977; Torgesen & Licht, 1983) have suggested that some children are less successful achievers than their basic intellectual ability would suggest because they are either unable to develop and use efficient task strategies, or they lack the inclination to do so. As theorizing and research in the field of cognitive information processing have advanced, there have been suggestions that the use of efficient strategies may itself be related to one's knowledge and awareness about the nature of the cognitive activity and of the person and task variables which influence such activity (e.g., Borkowski, 1985; Brown, 1978; Flavell,

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1978; Flavell & Wellman, 1977; Gibson & Levin, 1975; Snowman, 1986; Waters, 1982). This development has stimulated interest in assessing the separability of cognition and metacognition (e.g., Slife, Weiss, & Bell, 1985) and in investigating the tripartite relationships among cognitive performance, strategic behavior, and metacognitive knowledge or awareness (e.g., Byrd & Gholson, 1985; Cavanaugh & Borkowski, 1980; Waters, 1982).

Much of the research comparing good and poor readers on memory tasks is based on the conceptual framework that the differences observed between these two groups may be the result of differences in general cognitive strategies underlying not only performance on experimental memory tasks but also the attainment of reading and other academic skills (see Torgesen & Kail, 1980). Thus the central concern of experimental work on memory in populations of children who differ in reading ability actually transcends interest in the relationship between memory capabilities and reading proficiency per se. One ultimate objective of this line of research has been to understand the potential connections between deficient or inefficient cognitive strategic behavior and academic underachievement in general.

Some of the most frequently cited works in this line of research are briefly reviewed here. For example, Kastner and Richards (1974) found in a study of grade 3 students' memory strategies that while equal numbers of good and poor readers used the rehearsal strategy when presented with pictures of familiar stimuli, only the good readers continued to use rehearsal under a novel stimuli condition. In a study involving grade 2 students, Torgesen and Goldman (1977) found that even with familiar stimuli poor readers were deficient in the use of active strategies like rehearsal. Similar findings regarding poor readers' deficiency in the use of rehearsal strategies have been reported by Bauer (1977) and Tarver, Hallahan, Kauffman, and Ball (1976). Differences between good and poor readers in the use of more complex strategies have also been reported. In two separate studies, Torgesen and his associates found poor readers to be more deficient in the use of categorical organization to aid recall (Torgesen, 1977b; Torgesen, Murphy, & Ivey, 1979). Categorical organization involves grouping the list of items to be learned into conceptual categories.

In the presence of evidence that the strategic behavior differences between good and poor readers are significantly diminished when the latter are explicitly trained or instructed to use strategies (e.g., Torgesen, 1977b; Torgesen et al., 1979; Worden, 1983), the foregoing findings have been interpreted as supporting the proposition that the poor performance of poor readers on memory tasks is primarily a management problem. By inference, the failure to manage intact intellectual resources actively and with planning appears to be responsible, at least in part, for academic underachievement in populations of children with average intellectual ability. While current theorizing views metamemorial knowledge (i.e., statable knowledge about one's own memory, memory tasks, and about memory strategies and the variety of personal qualities necessary to apply them) as having a significant influence on such active and planned behavior, the extent to which metamemory

accounts for differences in the performance of underachieving and average achieving children has been less extensively researched.

The present study was designed to test the management hypothesis, assess the relative metacognitive knowledge level of average and poor readers, and ascertain the extent to which recall performance, strategy use, and metacognition are interrelated. Two separate experiments were performed to address these goals. Experiment 1, which was designed as an indirect test of the management hypothesis, employed the "central versus incidental" memory paradigm to examine the extent to which explicit instruction to memorize for later recall made a difference in the recall performance of average and poor readers. In this experiment, strategic behavior was not measured directly; rather, the design allowed for inferring the role of strategic behavior in recall and between-group differences in strategy utilization from the pattern of main and interaction effects obtained for recall performance in a multiple classification analysis of variance. It was hypothesized that if the management thesis was valid, the following two results would be obtained:

1. Across groups, students instructed explicitly to memorize for later recall (i.e., intentional memory condition) would perform better than those not instructed to do so (incidental memory condition); and
2. The average readers would show superior performance on the intentional memory task than on the incidental task.

The rationale for this second hypothesis was that spontaneous development and deployment of appropriate strategies (i.e., management) would be maximized under the intentional memory condition, and therefore the better managers should show significantly superior performance there than they would under the incidental condition. In connection with these hypotheses, we expected to find a significant main effect for memory type (intentional versus incidental) and a significant memory type x group (average versus poor readers) interaction.

Experiment 2, which was designed as a more direct test of the management hypothesis, examined between-group differences in recall performance, strategic behavior, and metacognitive knowledge and attempted to verify the interrelationships that have been theorized to exist among these variables. All three variables were measured directly, using appropriate instruments or tasks. With a few exceptions (e.g., Byrd & Gholson, 1985; Cavanaugh & Borkowski, 1980), comparative memory studies have traditionally tended to examine recall performance, strategic behavior, and metacognition independently of one another—making it impossible to assess these relationships. Two hypotheses were entertained. First, both strategy utilization and metamemorial knowledge would constitute sources of variation between average and poor readers. Second, both within and across groups, recall performance would be related to strategy utilization and metamemory, and the latter two variables would correlate strongly with each other.

Experiment 2 also addressed one important, albeit minor, methodological consideration. Studies examining strategic behavior have generally tended to assume that subjects already possess the basic concepts and capabilities

necessary for utilizing the relevant strategies. For example, children's use of the categorical organization strategy has been examined frequently without testing for evidence of the presence or absence of the ability to see categorical relationships in the first place. In the absence of such a test, the failure to adopt the categorization strategy cannot always be attributed to a production deficiency (i.e., to deficient strategic behavior per se). By ascertaining subjects' relative ability to see categorical relationships or sort items into conceptual categories, experiment 2 made it possible to make more conclusive comments about the management hypothesis.

Method

Subjects

Forty-eight grade 4 students selected from 10 schools within the Roman Catholic School Board for St. John's, Newfoundland, participated in the study. Subjects were chosen from a pool of students scoring between 85 and 115 on the Canadian Cognitive Abilities Test (CCAT), administered at the beginning of the school year by the Board. Reading performance on the Canadian Test of Basic Skills, also administered by the School Board at the beginning of the academic year, was the basis for assigning subjects to the poor reader ($n=23$) and average reader ($n=25$) groups. Because group membership was determined on the basis of reading proficiency, IQ matching of the two groups was based on scores on the nonverbal subtest of the CCAT. As Table 1 shows, the mean grade equivalent reading achievement scores for the poor and average readers were, respectively, 2.5 and 4.3. Although the groups were comparable on nonverbal IQ, they differed significantly on verbal IQ. The selection criteria resulted in the inclusion of more boys ($n=31$: 15 poor readers and 16 average readers) in the study than girls ($n=17$: 8 poor readers and 9 average readers), but both sexes were roughly equally represented in the two groups.

Instruments and Procedures

Both experiments employed picture rather than word stimuli. The choice of picture tasks was made in an attempt to control for the potential confounding effects that written stimuli could have on the performance of the poor

Table 1

Academic[1] and Cognitive Characteristics of the Sample

	Average Readers		Poor Readers		
	Mean	*SD*	Mean	*SD*	*F*-Value
Reading	4.3	0.41	2.5	0.19	335.82 ***
Math	4.4	0.33	3.4	0.68	38.88 ***
Verbal IQ	102.3	7.48	97.4	6.09	6.09 *
Nonverbal IQ	98.3	9.19	96.5	7.95	0.49 NS

*$p<.01$;***$p<.001$

[1]Grade level scores for reading and math

readers. Especially in experiment 2, where one primary focus was the direct assessment of strategic behavior, it was crucial to ensure that this assessment was not confounded by difficulties that poor readers might have decoding word stimuli.

Experiment 1

Line drawings of 15 common objects selected from the grade 2 level of the Dolch word list (Dolch, 1955) constituted the stimulus for this experiment. Each picture belonged to one of three distinct conceptual categories (*means of transport:* truck, car, train, bus, boat; *animals:* rabbit, cat, dog, cow, horse; *and things you eat:* candy, pie, bread, ham, apple). Pictures were drawn to equal size and were all placed on one page. Four of the objects had missing parts (e.g., the car did not have a door), a feature which made it possible to present the stimulus to the unintentional group as a search task. The pictures were located on the page in such a way that they were not in well defined columns or rows, and no two objects from the same conceptual category were adjacent to each other.

The task in experiment 1 was the first to be given to subjects in the study and was given on a separate day in a group setting. Each student was given a sheet of paper with the 15 pictured objects on it. The *intentional groups* were explicitly instructed to study the pictures for later recall, while the *unintentional groups* were instructed only to study the pictures carefully in order to identify those with missing parts. After the study period (a maximum of 2 minutes), the picture sheets were collected and each student was given a paper and pencil and asked to write down the names (labels) of as many of the pictures as they could remember without paying any attention whatsoever to spelling. The number of items recalled was the dependent measure for this experiment.

Experiment 2

A picture recall task and a set of metamemory tasks were used in this experiment.

Recall task. The stimulus for the recall task consisted of a second set of 15 line drawings of common objects representing grade 2 level nouns from the Dolch word list (Dolch, 1955). The objects were totally different from those used for the group-administered task in experiment 1. Each of the 15 line drawings was reproduced on a separate card, with the back of each card numbered to enable the examiner to lay the cards out in the same sequence for each subject. Again, each of the 15 items belonged to one of three distinct conceptual categories. This time the categories were *things you wear* (glove, hat, shoes, crown, and socks); *furniture* (table, bed, chair, lamp, and desk); and *body parts* (hand, nose, foot, eye, and ear). The task was designed to provide the efficient memorizer the opportunity to categorize the items during input.

The recall task was administered individually by the second author with the subject sitting at a small table or desk directly facing the examiner. All 15 cards were laid out face up in front of each subject in the same order with no two items from the same category placed in adjacent positions. Subjects were

instructed to try to memorize for later recall as many of the items as they could, doing anything they wished with the cards to help them remember the items. Subjects were asked to notify the examiner as soon as they had finished studying the pictures. A maximum time limit of 5 minutes was allowed, and each subject was inconspicuously timed, from when all the cards had been laid out to when notification regarding completion of the task had been received.

During the study period the examiner observed and made descriptive notes on any observable behaviors and/or strategies such as lip movement, counting, or scanning. Card manipulation was particularly scrutinized, especially with respect to shuffling or organization into meaningful groupings. On signalling completion, subjects were given a blank sheet of paper and a pencil to write down the names of as many items as they could remember. The examiner stressed that spelling was not important, and the examiner could be asked for assistance with spelling if subjects found it necessary to be able to carry on with the task.

Following recall, the examiner asked each subject the following three questions designed to obtain a self-report of how the subject went about memorizing the items:

1. How did you learn the list? What did you do to be sure that you would remember the pictures? What else did you do? Anything else?
2. Why did you learn the list in that way?
3. Are there any other ways you could have studied the pictures?

Following this interview the examiner went through an activity designed to ascertain whether subjects' failure to use categorical organization during memorization was due to deficits in conceptual classification ability or to difficulties in spontaneously taking strategic advantage of existing skills. The pictures were laid out on the table again in the original order. If a subject used grouping spontaneously and conspicuously during the study and recall period, he or she was simply asked how many categories there were and how many items were in each category. Answering these questions correctly earned the subject the maximum categorization score of 8 points. Students who did not use categorization conspicuously were asked to arrange the pictures into three conceptual categories by putting together all pictures which were similar (i.e., had something in common) and to label each category. A score lower than 8 was assigned to each student depending on the quality of performance.

A strategy-use scoring key was developed after collating information from each subject's verbal protocols on the three questions above and from the examiner's observational notes. Protocols and notes relating to question 1 (How did you learn the pictures?) revealed that in all 13 different strategies were employed by subjects. After compiling a list of the strategies and their descriptions, the two authors and five informed graduate students ranked the strategies in order of sophistication. The 13 strategies were grouped into five classes with categorical organization (10 points) and random or ordered scanning without verbalization/rehearsal (2 points) as the highest and lowest

classes respectively. Point values of 8, 6, and 4 were assigned to the middle three classes.

A maximum of 3 points were awarded for question 2 (Why did you learn the list in that way?) whereas 1 point was awarded for any one or more strategies provided in response to question 3. Finally, a 2-point bonus was awarded for spontaneous monitoring or checking behavior such as counting the number of items before attempting to commit them to memory and verifying the completeness of recall by matching the number recalled with the first number. This manner of scoring yielded a maximum strategy index score of 16.

Metamemory task. The metamemory tasks for this study were selected from Kreutzer, Leonard, and Flavell's (1975) interview questionnaire. In each of the four tasks (story list, preparation object, retrieval event, and rote paraphrase), an orally presented hypothetical situation was used to elicit information on various aspects of children's awareness about their own memory. Borkowski and his associates have found these four tasks to be the most valid and sensitive indicators of metamemory within the Kreutzer et al. interview for children between 6 and 9 years of age (Borkowski & Kurtz, 1984; Cavanaugh & Borkowski, 1980).

In order to be able to perform higher-level quantitative analyses on the data, we departed from the scoring system originally used by Kreutzer and associates. Instead of attempting to describe children's responses to each of the situations separately, we coded responses and assigned points to each response class according to the level of sophistication. A composite metamemory score was then derived for the entire battery (maximum score of 30 points, including 2 points awarded for responses to one of the probe questions[1] asked in connection with the categorization task described above). Kurtz, Reid, Borkowski, and Cavanaugh (1982) have shown that pooling the various subtests of the Kreutzer et al. (1975) interview to yield a composite score enhances reliability (see also Schneider, 1985). Each of the four tasks is described briefly below.

Story list for assessing children's knowledge of the efficacy of elaboration: Subjects were presented the situation that two children had to try to remember eight pictures (man, bed, tie, shoes, table, dog, hat, and car). One child only saw the pictures, while the other saw the pictures and heard a story involving all eight items. Subjects were to indicate which condition made it easier to remember, which child would learn the most, and why. One point each was awarded for stating that the story made it easier and that the child hearing the story would remember more. Additional points (maximum=4) were awarded for ability to verbalize an explanation for why elaboration would enhance retrieval.

Preparation object for measuring planning behavior in preparing for future retrieval: Instructed to assume that they were going skating the next morning, subjects were asked what they would do to make sure that they did not forget their skates. Possible answers were grouped into four categories with a one-point credit for an answer from each category (maximum of 4 points). The categories were relying on external cues having to do directly

with manipulation of the skates themselves; relying on external cues provided by others; relying on external cues involving the use of another object (e.g., a note); and relying on internal mental cues.

Retrieval event for assessing systematic memory search for a past event: Subjects were asked to assume that they had lost a jacket and to indicate how they would go about finding it. A maximum of 7 points were awarded for a variety of potentially useful strategies.

Rote paraphrase for assessing children's knowledge of the relative ease of gist recall over rote recall: Presented with a hypothetical child who was required to remember a story, subjects were asked to indicate whether the story would be easier to learn by rote or by paraphrasing it. Through a series of questions subjects were awarded points (maximum=11) for verbalizing an understanding of how recalling word for word is more difficult than recalling the gist, and for showing awareness of the advantages of the hypothetical character knowing the task requirements before choosing the method of study.

To ascertain the reliability of the metamemory scoring system, 10% of the protocols were selected randomly and scored independently by the second author and another scorer. The two scorers arrived at the same score for each protocol with the exception of one on which they differed by one point. A copy of the scoring key may be obtained through the first author.

Results and Discussion

Experiment 1

Employing the "central versus incidental memory" paradigm, this experiment used a group-administered recall-only task to test two hypotheses:

1. that across groups, students instructed explicitly to memorize for later recall would perform better than those not instructed to do so, and
2. that the average readers' performance on the intentional memory task would be superior to their performance on the incidental memory task.

The mean recall performance for each group of students under the two memory conditions are reported in Table 2. A 2 (memory type) x 2 (group) analysis of variance, with verbal IQ covaried out, produced a significant main effect for memory type ($F=19.55, p<.001$), no main effect for group ($F=1.71$, $p=.19$), and no interaction effect ($F=0.34$, $p=.55$). The results of the experiment confirmed our first hypothesis regarding the superiority of intentional memory over unintentional memory. Support was not found for the second hypothesis. The superior recall performance under the intentional condition is presumed to be the result of relatively more conscious strategic processing of information. Therefore, the absence of a significant interaction between memory type and group would appear to suggest that at least on the group administered task, poor and average readers did not differ in their management behavior. However, visual inspection of the means (Table 2) reveals that the average readers were generally stronger than the poor readers on the intentional task (difference in means=1.4) than they were on the unintentional task (difference in means=0.7).

Table 2
Means and Sample Sizes for Average and Poor Readers by Memory Type

	Average Readers	Poor Readers
Intentional	12.22 ($n=11$)	10.82 ($n=11$)
Unintentional	9.00 ($n=14$)	8.27 ($n=12$)

Experiment 2

In this experiment, we examined group differences in recall performance, strategy use, metamemory, and study time. Table 3 reports the means and standard deviations for each variable by group and the results of both multivariate and univariate analyses of variance performed on the data. The analyses showed that average readers recalled significantly more items, utilized significantly more sophisticated strategies, and possessed richer metamemorial knowledge. The two groups of students did not differ significantly on study time, although average readers tended to spend more time studying the task than did poor readers.

Even after covarying out the potential effects of the original verbal IQ differences, the average readers remained superior in both strategy use ($F=5.23$, $p<.05$) and metamemory ($F=4.51$, $p<.05$), although the two groups were no longer different in terms of recall performance. The finding

Table 3
Group Differences on the Four Dependent Measures[1]

	Average Readers		Poor Readers		
	Mean	*SD*	Mean	*SD*	Univariate F[2]
Recall	10.6 (10.5)	2.5	9.2 (9.4)	2.1	4.51 *
Strategy use	4.8 (4.7)	2.1	3.2 (3.2)	1.8	8.49 **
Metamemory	21.4 (21.2)	3.9	18.1 (18.2)	4.9	6.27 *
Study time[3]	2.4 (2.3)	0.9	1.9 (2.0)	1.3	1.49 NS

Multivariate $F_{5,39}=3.24$; $p<.05$
*$p<.05$; **$p<.01$
[1]Numbers in brackets are adjusted means after covarying out verbal IQ.
[2]F-values, prior to covarying out verbal IQ.
[3]Study time is reported in minutes.

that average and poor readers differed in strategic (management) behavior and metamemorial knowledge, even when they had been roughly equated on basic intellectual ability, suggests that inefficiency in strategy utilization and low metacognitive knowledge may be important ingredients of the underachievement displayed by the poor readers.

However, while the management hypothesis was confirmed statistically in this analysis, two observations emerging from our descriptive analysis cast some doubt on the true practical significance of that finding. The first observation is the strikingly low mean strategy use score for both average and poor readers. The maximum attainable strategy sophistication score was 16, but even the more efficient strategy users had a mean score of 4.8. In both groups, the most frequently utilized strategy was unorganized rehearsal (i.e., repeated rehearsal of all 15 items together). Thirty-five percent of the poor readers and 56% of the average readers employed this strategy. Strategies considered to be superior to unorganized rehearsal (e.g., organization via conceptual categorization, meaningful association of items, elaboration, or chained rehearsal) were used by only 32% of average readers and 13% of poor readers.

It must be noted, however, that the low level of strategy sophistication found in this study is consistent with the picture that emerges from developmental studies, namely, that children at or below 11 years of age generally employ less sophisticated strategies than older children or adults. For example, describing developmental trends in the use of strategies, Kail and Hagen (1982) noted that the first inkling of mature strategy use does not emerge until about age 10 years. On the other hand, there is extensive evidence to indicate that the less sophisticated rehearsal strategy is commonly employed by younger children. For example, Flavell, Beach, and Chinsky (1966) found the use of rehearsal by 65% to 85% of 10-year-olds. Kail and Hagen's (1982) review indicated that rehearsal becomes a common learning strategy at about 9 or 10 years. In the present study, the most commonly used strategy was rehearsal (46% of all subjects used it).

The second noteworthy observation is that although none of the poor readers (and only four of the average readers) spontaneously employed categorical organization to aid memorization, most subjects in both groups were able to sort the items into the three distinct categories when asked to do so during the postrecall probe session. In fact, the two groups did not differ on the categorization skill score derived from this probe. The means for this variable for the poor and average readers were 4.3 ($SD=1.2$) and 4.9 ($SD=1.5$), respectively. Thus there was a clear case for production deficiency as a good explanation for children's failure to use categorical organization in this study, but this case was as true of the average readers as it was of the poor readers.

Interrelationships Among Recall, Strategy Use, and Metamemory

Correlations among recall performance, strategy use, metamemory, and study time were calculated separately for the two groups. Among the poor readers, students utilizing more efficient strategies recalled more items

($r=.45$, $p<.05$). Also, students who studied the task longer recalled more items ($r=.55$, $p<.01$). The strongest correlation found in this group was between strategy use and metamemory ($r=.71$, $p<.001$). Although positive correlations were found between recall performance and metamemory ($r=.26$) and between strategy use and study time ($r=.25$), these relationships were not significant. A larger number of intercorrelations was found in the average readers group. Recall performance correlated significantly with strategy use ($r=.56$, $p<.01$), metamemory ($r=.71$, $p<.001$), and study time ($r=.38$, $p<.05$) while strategy use correlated significantly with metamemory ($r=.65$, $p<.001$) and study time ($r=.37$, $p<.05$).

Thus our hypothesis concerning the within-group interrelationships among the three main memory variables was confirmed wholly for average readers and partially for the poor readers. In both groups, students who employed more sophisticated strategies recalled more items, and students with superior metamemory utilized more sophisticated strategies. However, only in the average reader group was superior metacognitive knowledge significantly related to better recall. Also noteworthy was the difference between the two groups in the relationship between study time and strategy use. Compared with the poor readers, average readers appeared to have invested more of their study time in strategic activity.

In order to go beyond the relationships reported for each group to make broader generalizations about the three-way relationships among recall, strategy use, and metamemorial knowledge, a separate analysis based on the total sample of 48 subjects was performed. Pearson product-moment correlations among the variables were computed, simultaneously partialling out the effects of verbal IQ and reading proficiency. The correlation coefficients for all three sets of relationships were statistically significant with the strongest correlation being that between strategy use and metamemory ($r=.69$, $p<.001$), followed respectively by recall and strategy use ($r=.58$, $p<.001$), and recall and metamemory ($r=.54$, $p<.001$). This ordering in the strength of correlations provides some support for aspects of Borkowski's (Borkowski & Kurtz, 1984) theoretical formulations regarding relationships among the three variables. Borkowski has suggested that "metamemory should be linked more closely to strategic behavior than to recall accuracy ... because metamemory is a setting variable for strategy use" (p. 201). More importantly, however, these correlations confirm the general theoretical proposition that metacognitive knowledge should be related not only to strategic behavior but also to recall performance and are consistent with conclusions drawn recently by Schneider (1985) from his meta-analysis of extant research.

Summary and Instructional Implications

This study clearly confirmed the conceptualized superiority of intentional memory over unintentional memory, corroborated existing evidence that efficient strategic behavior is associated with better recall performance, and provided evidence that general metacognitive knowledge may be an important source of variation between average achievers and underachievers in reading. However, the evidence in support of the traditional management

hypothesis was rather weak. The evidence for strategic behavior differences between the average and poor readers was not as strong as the evidence for metamemorial knowledge differences. Not only did the average readers have superior metamemorial knowledge, but they appeared also to have been able to take better advantage of their general knowledge of memory in their recall performance than the poor readers.

With regard to strategic behavior, perhaps what is insightful about this study lies more in the similarities between the two groups than in the differences. Not only was the level of strategy sophistication low among both groups, but average and poor readers alike manifested the classic production deficiency that has traditionally been associated with low ability and learning disabled students. Production deficiency refers to the situation whereby children who have the relevant prior knowledge (or strategy) often fail to use it to advantage on appropriate occasions (see Brown, 1987). One inference that can be drawn from these results is that the strategic behavior attributes described in the study appear to be more closely tied to age than to level of achievement. This inference is worth examining in future research; however, such research must ensure greater variability in level of achievement than is the case in the present study. It is conceivable that a comparison of poor readers with more-than-average readers would produce more dramatic strategic behavior differences.

Finally, this study has demonstrated that regardless of real or potential between-group differences in recall performance, strategic behavior, and general metamemorial knowledge, the latter two are sources of significant individual differences in recall.

Instructional Implications

As indicated in the opening paragraph of this article, memory and general strategic behavior are core components of the learning process. Thus, while the experimental tasks employed in this investigation are not typical classroom tasks to the extent that the processes engendered by these tasks can be held to mirror general processes that children bring to cognitive tasks, the findings of this study have practical relevance to classroom strategy instruction. In this section we present several instructional implications. The partly correlational nature of our data does not allow us to make strong inferences about how strategic and metacognitive processes are causally linked to academic performance. However, the suggested applications are strengthened by the fact that corroboration for aspects of our findings exists in the experimental literature.

Enhancing performance through strategy training. Two of our findings underscore the importance of strategy training:

1. that across groups the intentional memory condition produced better recall performance than the unintentional recall condition, and
2. that students who used more sophisticated strategies also recalled more items.

Seen in relation to the view that cognitive strategies are a learnable—and hence a teachable—capability (Gagne, 1985; Marfo, Mulcahy, Peat, &

Andrews, in press), these findings suggest that one way to improve learning and performance in school is to include strategy instruction in the curriculum. The focus and purpose of such explicit instruction in cognitive strategies will be to enable students to consciously devise and use strategies when confronted with cognitive tasks. A discussion of the *how* of teaching strategies is beyond the purview of this paper; one potentially viable approach to strategy instruction is described in detail by Mulcahy, Marfo, and their associates (Marfo et al., in press; Mulcahy & Marfo, 1987; Mulcahy, Marfo, Peat, & Andrews, 1986; Mulcahy, Marfo, Peat, Andrews, & Clifford, 1986).

The relevance of strategy instruction cuts across ability and achievement levels. A second noteworthy implication emerging from this study is that explicit strategy training is necessary not only for underachievers but also for average achievers. Recall that the correlation between strategy use and recall performance was positive and significant for both groups of students, and both groups of students displayed a relatively low level of sophistication in strategy use. This is not to suggest that students at different ability or achievement levels have similar strategy instructional needs. For example, our results show that the average readers may have invested more of their study time in strategic pursuits than the poor readers. Thus, while all students can benefit from strategy instruction, the focus and nature of instruction will have to vary from student to student.

Embedding metacognitive activities in strategy instruction may enhance the outcomes of such instruction. Third, from the strong correlations between metacognitive knowledge and strategy use, it appears that embedding metacognitive activities in strategy instruction could produce even better results. That is, providing information about how and why specific strategies may be appropriate or inappropriate for specific tasks may serve to enhance the spontaneous generation and/or use of strategies. Support for this recommendation comes also from the work of Pressley and his associates (e.g., Pressley, 1986; Pressley, Borkowski, & O'Sullivan, 1984) who have examined the role of *metacognitive acquisition procedures* in strategy learning and generalization.

Note

1. This probe required subjects to indicate whether it would have been easier to memorize the pictures if the items were presented in a categorized format.

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Effectiveness of Teacher-Administered Tests and Rating Scales in Predicting Subsequent Academic Performance[1]

Early screening is necessary to facilitate prompt intervention with respect to learning difficulties. Thus it is of practical value to investigate the efficacy of tests and rating scales which teachers can administer, as compared with individual psychological assessments, in screening for learning difficulties. To this end, 197 kindergarten children were assessed on an extensive battery of individually administered assessment instruments including the Stanford-Binet and Metropolitan Readiness Tests. Teacher assessments involved the Davids and Myklebust rating scales for pupil behavior. Follow-up assessment of the children's achievement was completed at the end of grade 1. Indications are that the best predictors of grade 1 achievement are the Metropolitan Readiness Tests and the Myklebust Pupil Rating Scale. This offers support for the view that appropriate teacher rating scales and group tests which teachers administer can effectively predict subsequent academic performance and encourages further study of the potential of the classroom teacher as the primary screening agent for learning difficulties.

The early identification of children with learning difficulties is a recurring theme in psychological and educational research. Early detection of school learning problems is a challenge, but chief among the benefits is the avoidance of needless failure and the concomitant psychologically maladaptive behaviors that compound the complex learning situation (Casto & Mastropieri, 1986; Lazar & Darlington, 1982). Clay (1985) has stated her support for early identification of learning problems, specifically reading disabilities. She outlines four major problems resulting from delayed remediation: a great gap or deficit to be made up; consequential deficits in

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other areas of education; consequences for the child's personality and confidence; and the practice over a period of time of incorrect behaviors which must be unlearned before appropriate strategies can be taught.

Previous research efforts to develop an effective index for predicting school learning difficulties have emphasized the use of psychometric testing procedures assessing numerous aspects of general intellectual ability as well as specific skills related to classroom functioning. It is recognized that some variance in grade 1 achievement is accounted for by differences in cognitive ability (Gullo, Clements, & Robertson, 1984; Tollefson, Rodriguez, & Glazzard, 1985). Deficiencies may occur in coordination, language, memory, visual and auditory discrimination, and sequencing (Schmidt & Perino, 1985; Swanson & Mason, 1984; Tollefson et al., 1985). Specific preacademic skills such as knowledge of the alphabet, numbers and colors, the ability to print one's first name, and recognition of various simple geometric shapes are also associated with success in grade 1 (Barbe & Shields, 1976). The manner in which students approach activities, their organization, motivation, task orientation, interest, and perseverance also emerge as factors related to school performance (Hightower et al., 1986). In addition, school performance is related to the manner in which children interact socially and their ability to follow classroom rules and conform to behavioral requirements (Cooper & Farran, 1988).

The assumption has been that individual assessments by highly trained specialists are necessary to obtain accurate information regarding these factors. Indeed, while such procedures have proven to be of reasonably high predictive value, their cost in terms of time, money, and labor makes such examinations impractical as primary screening tools (Ysseldyke et al., 1983). Recent thinking in school systems recognizes that instructional decision making relies on a teacher's ongoing evaluation of individual student needs (Gerber & Semmel, 1984; Shinn, Tindal, & Spira, 1987). It is suggested that specialists and consultants would provide a more valuable service by assisting with program development, empowering teachers to use their observational skills effectively, and entrusting them with the responsibility of identifying those students at risk for developing problems with achievement in school.

Findings from research focusing on the teacher's role in screening for learning problems have varied. Fletcher and Satz (1984) and Stevenson, Parker, Wilkinson, Hegion, and Fish (1976) reported that only about 20% of those children who subsequently experienced severe learning difficulties were correctly identified by their preschool teachers as children in need of special assistance when global descriptions were involved. However, when checklists or rating scales which included items related to the criterion performance (i.e., school achievement) were included, predictions in the range of 70 to 85% accuracy were made (Becker & Snider, 1979; Lindsay & Wedell, 1982; Simner, 1986). This is not surprising when one considers that the teacher is aware of the child's functioning levels over an extended period, that his or her examination does not rely on a child's cooperation during a

single, specific testing session, and the child's environment is not disrupted by removal from the classroom to obtain the information.

As it would be reasonable to institute an early school screening program involving teacher administered tests and teacher ratings of children's learning characteristics, and the predictive potential of some rating scales such as the Myklebust Pupil Rating Scale (e.g., Doherty & Margolis, 1981) appears to be good, it would be valuable to investigate the efficacy of teacher assessments compared with individual psychological assessments in screening for learning problems.

The present research project attempted to obtain information on the effectiveness of rating scales and tests which can be efficiently administered by classroom teachers in predicting subsequent academic performance. Such research is preliminary to studying the potential of classroom teachers as primary screening agents for learning difficulties.

Method

Participants

The sample was drawn from four schools in the public school system, each having large populations considered to be representative of the range of socioeconomic levels in the city of Edmonton, Alberta. Using the Blishen Socio-Economic Index for Occupations in Canada (Blishen & Roberts, 1976), the mean family socioeconomic status (SES) rating of the sample in kindergarten was 4.4 (where a rating of 1 is very high and 6 is very low). This is consistent with the norms which show a predominance of lower ratings (4 to 6) in the general Canadian population. Parental permission was obtained to assess 200 children, 5 to 6.5 years of age (mean = 67.0 months; SD = 3.8 months) from 10 kindergarten classes. The sample was intended to be a normal distribution of children, not a sample of children with learning problems. Three of the children were not assessed as one was considered too young and two others were found to have been of very low birth weight (<1500 grams), which would have introduced a potential intervening variable. Thus the final kindergarten sample consisted of 197 children, 104 girls and 93 boys. Of that group, 171 children were still residing in the city one year later and were assessed again at that point.

Instruments

The length of the comprehensive, individually administered, kindergarten test battery was limited by the need to confine testing to one session and to avoid undue fatigue or distress to the children. The measures were chosen to assess levels of functioning in five areas considered to be predictive of learning disabilities, namely, intelligence, attention deficit behavior, linguistic processes, visual processes, and memory (Meyer, 1988).

The kindergarten battery included the following tests: Stanford-Binet Intelligence Scale (SBIQ, Form LM), selected as having norms that extended below five years of age; Metropolitan Readiness Tests (MRT, Form P, Level 1), chosen to measure preacademic skills of auditory memory, rhyming, letter recognition, visual matching, school language and listening, and quantitative language; Peabody Picture Vocabulary Test (PPVT) of receptive vocabulary;

and Developmental Test of Visual-Motor Integration (DTVMI), assessing the integration of visual perception and motor coordination. These tests are considered to be among the more reliable and valid tests available for kindergarten assessment batteries (Salvia & Ysseldyke, 1988). The MRT is designed to be administered by teachers as a group test whereas the other three tests are intended for individual administration by trained personnel. The Davids Rating Scale for Hyperkinesis (DRS), a measure of behavior problems for children at risk for educational difficulties, and the Myklebust Pupil Rating Scale (PRS), an instrument for learning disabilities screening, both rating scales designed for teacher use, were also part of the battery.

The grade 1 achievement assessment consisted of the Canadian Test of Basic Skills (CTBS, Level 6, Form 5), including subtests of listening, vocabulary, word analysis, reading, language, and mathematics. (In discussion of the results, CTBS will denote the composite percentile score for the test.) As well, teachers were asked to rate the children on reading, mathematics, oral language, and vocabulary using a simple three-point scale, where a score of 1 was below average, and 3 was above average. These four scores were summed to obtain a composite teacher rating (Rtot) for each child.

Procedure

All children were assessed individually, each in a two-hour testing session in their respective schools during April and May of their kindergarten year. All testing and scoring was done by the first author and three research assistants trained by the first author. When all assessments were completed, classroom teachers rated each child on the two rating scales (DRS and PRS) under the direction of the first author who recorded all teacher responses.

In May of the following year the CTBS was administered to all children, individually or in groups depending on the numbers of children in particular schools, by two research assistants who also did all scoring. As well, teachers completed the brief rating scale previously described for each child.

Results

While the total number of children assessed at kindergarten level was 197, the maximum number of cases for kindergarten variables varies from 189 to 197 due to some missing data on one or more tests in the battery. The mean (*M*) and standard deviation (*SD*) for each variable are reported in Table 1. Note that the sample performs above the normative mean score on both the SBIQ and PPVT but below the normative mean score on the MRT.

At the grade 1 level, 171 students (94 boys and 77 girls) remained in the sample, 26 having moved out of the city. Mean age at grade 1 testing was 79 months (*SD* = 3.8 months). Table 1 also reports mean performance (and *SD*s) on the grade 1 tests and ratings. Mean performance for the group on the CTBS was 42.0, below the mean percentile for the test's normative distribution but in the average range.

At both kindergarten and grade 1 levels, the sample appeared to fit the description of a "normal" distribution, with more children scoring in the average range and fewer at the ends of the distribution.

Table 1
Means, SDs, and Ns for Standardized Tests and Rating Scales Administered in Kindergarten and Grade 1

	n	*M*	*SD*
Kindergarten (N=197)			
Stanford-Binet IQ Score	197	107.6	14.1
Metropolitan Readiness Composite Percentile	197	36.7	23.2
Peabody Picture Vocabulary Test Standard Score	197	107.4	16.3
Beery DTVMI Transformed Score (MA-CA+100)	197	97.0	8.2
Davids Hyperkinesis Rating Scale Total Score	189	17.1	5.8
Myklebust Pupil Rating Scale Total Score	189	75.7	18.7
Grade 1 (N=171)			
CTBS Composite Percentile Score (CTBS)	171	42.0	26.5
Composite Mean Teacher Rating (Rtot)	171	2.0	0.6

Intercorrelations between tests and ratings for kindergarten and grade 1 data are reported in Table 2. Note that the strongest intercorrelations were between the MRT and SBIQ (.60), MRT and PRS (.57), MRT and CTBS (.66), SBIQ and CTBS (.64), and the PRS and CTBS (.56). A stepwise regression analysis indicated that the best predictors of grade 1 CTBS were the MRT (R=.66), MRT and SBIQ (R=.73), and MRT, SBIQ, and PRS (R=.75). No other variables met the .05 significance level for entry into the model.

Table 2 also indicates that for grade 1 teacher ratings (Rtot) the strongest intercorrelation was between MRT and SBIQ and Rtot (.60 and .51, respectively), but the intercorrelation between the PRS and Rtot was somewhat lower (.42). A stepwise regression analysis indicated that the best predictors of teacher composite ratings for grade 1 were the MRT (R=.61) and MRT and SBIQ (R=.63), with no other variables meeting the .05 significance level for entry into the model.

Table 2
Intercorrelation Matrix: Kindergarten Tests and Teacher Rating Scales with Grade 1 CTBS Composite Score (CTBS) and Teacher Rating Total Score (Rtot)

	MRT	SBIQ	PPVT	DTVMI	DRS	PRS	CTBS	Rtot
MRT		60	46	25	–15	57	66	60
SBIQ			51	33	–06	44	64	51
PPVT				04	–06	35	39	26
DTVMI					–04	19	21	29
DRS						–55	–14	–06
PRS							56	42
CTBS								74

A series of discriminant function analyses was also performed in an attempt to determine the extent to which the psychoeducational tests and behavior ratings for the sample of students in kindergarten would differentiate two identified subgroups of these children one year later.

It would seem reasonable to expect the kindergarten test results to predict accurately those children who stand out as being above or below average in grade 1 performance, thus potentially needing special attention in the form of enrichment or remediation. Two ways were available to classify the children in this manner: (a) those who scored in the upper (25 students; 15% of sample) and lower (48 students; 28% of sample) quartiles on the CTBS in grade 1 (N=171); and (b) those who obtained below average (<4) (n=48; 28%) versus above average (>8) (n=50; 30%) total teacher ratings.

For the CTBS classification, all the tests in the battery (MRT, SBIQ, PPVT, DTVMI, DRS, and PRS) correctly predicted group membership in the upper and lower quartiles for 93.2% (68) of the 73 students so classified by the CTBS. The MRT and PRS correctly classified 90.4% (66), and the PRS alone correctly classified 86.3% (63). Thus the teacher rating scale alone was less accurate than the full battery, but the two instruments which can be teacher administered (MRT and PRS) were almost as good as the full battery for predicting group membership so defined. Thus little accuracy is lost in moving from the six-predictor to the two-predictor system.

For classification on the basis of high or low grade 1 teacher ratings, the MRT and PRS were only slightly less accurate (78.6%, or 77 of 98 students) than the full battery (81.6%, or 80 of 98 students), in correctly predicting group membership. The PRS alone accurately predicted group membership for 74.5% (73 students).

Thus, for predicting the two classifications of extreme groups, the pupil behavior rating scale (PRS) alone was least accurate, but when coupled with the MRT, a second test which can be teacher administered, was about as accurate as the total battery used in this study. Of the two classification systems, that using the CTBS is likely the more accurate measure of grade 1 performance, as it involves a standardized achievement test rather than a simple three-point teacher rating scale.

Discussion and Conclusions

Taking into consideration the intercorrelational data, stepwise multiple regression analyses, and particularly the discriminant function analyses, it is apparent that the MRT and PRS, both of which can be teacher administered, are among the best predictors of grade 1 CTBS and grade 1 teacher ratings. This finding is consistent with the literature on predictive usefulness of these two tests (e.g., Doherty & Margolis, 1981; Gullo et al., 1984) and usefulness of teacher administered tests as primary screening tools (e.g., Gerber & Semmel, 1984). The fact that the prediction of global teacher ratings was less accurate than predication of CTBS groups is likely a consequence of lower reliability of the global ratings. Interestingly enough, on the predictor side of the equation the PRS, which is also a rating scale, did not seem to suffer the same problem. However, it has been shown (e.g., Fletcher & Satz, 1984;

Simner, 1986) that global teacher ratings are less reliable than teacher checklists or rating scales.

At the grade 1 level, and particularly for the CTBS, the two tests which can be teacher administered are almost as good as the larger battery in predicting grade 1 outcome. This study suggests that well-chosen teacher administered tests and rating scales at kindergarten may have good potential as an efficient and effective screen for children in need of early remedial assistance. Note that the MRT and PRS represent a fairly comprehensive assessment of skills relevant to predicting learning disabilities (Meyer, 1988) and were clearly superior in accuracy to such tests as the DRS and DTVMI, which are also designed for individual assessments by trained teachers. Clearly, the accuracy of the teacher as a primary agent in screening for learning problems (e.g., Gerber & Semmel, 1984) is contingent on using appropriate screening instruments.

Use of the teacher as the primary screening agent (Gerber & Semmel, 1984; Shinn et al., 1987) warrants further examination as it offers potential to alter the nature of the school psychologist's role to one of program consultation and planning rather than one focused on assessment of learning problems (Ysseldyke et al., 1983).

Note

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School Effectiveness and Principals' Effectiveness and Job Satisfaction: A Comparison of Three School Levels

Educational research has been criticized for neglecting comparative studies of specific types and levels of school organizations. This article compares findings from parallel studies in elementary, junior high, and senior high schools in Alberta. The studies investigated levels and important determinants of school effectiveness, job satisfaction of principals, and the effectiveness of principals. Principals at all three levels expressed moderate satisfaction overall and satisfaction with their working relationships at school; satisfaction with district relationships, workloads, inservice, and remuneration, however, varied with school level. While staff-related matters were most important for principals' satisfaction, several facets influenced overall job satisfaction. Schools at all levels were regarded as moderately effective overall and effective on most conventional criteria. Community liaison and extracurricular provision were among the dimensions where school-level discrepancies occurred. Principals at each level also rated themselves as moderately effective overall and most effective in decision making and creating a positive working environment; major school-level differences concerned principals' adaptability and influence on staff improvement. Teachers and area superintendents rated effectiveness lower, highlighting the need for multiple-constituency studies. The importance attached to many criteria showed effectiveness to be a more complex phenomenon than some convenient school effectiveness checklists suggest. More expansive perspectives are recommended for studying and diagnosing effectiveness levels in schools.

Most educational studies and theorizing to date have been pursued with only perfunctory acknowledgment of the distinctive qualities of various school levels, types, and environments. Such an approach is consistent with the theory movement in educational administration, which was founded on a belief in a universally applicable theory of organizational behavior. However, many scholars now assert the need to examine systematic variations in administration and work in educational settings of different kinds, and Griffiths' (1988) recent admission is indicative of a change of attitude among former proponents of a widely generalizable administrative theory: "In fact,

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it would seem that it is necessary to have theories specific to particular types of educational institutions" (p. 48).

One patently logical basis for classifying school organization types for the purpose of theoretical argument and research is by educational level, because administrators, educators, and other participants in schools of different levels seem to display many disparate concerns and attributes. This article compares findings from three recent studies in elementary schools (Johnson, 1988), junior high schools (Sroypan, 1988), and senior high schools (Gunn, 1984; see also Gunn & Holdaway, 1985, 1986). Similar methods were used in the three studies to elicit perceptions from principals and other educational constituencies in connection with school effectiveness, the effectiveness of principals, and the job satisfaction of principals. The purpose of this comparison is to identify points of perceptual consistency and departure to assist in advancing the development of theory relating to specific educational levels.

Although few researchers have systematically examined organizational peculiarities and commonalities among elementary, junior high, and senior high schools, some pertinent observations have been made. In general terms, a review of limited available research led Hallinger and Murphy (1987) to posit several probable differences between elementary and secondary schools; these differences related to organizational goals, administrative structure, characteristics of teachers and students, curriculum organization and instruction, and links with parents and the community. Regarding differences among teaching practices, Holdaway and Millikan (1980) reported more specifically on a tendency for elementary school teachers to work more collegially than junior and senior high school teachers, particularly with regard to soliciting advice and assistance about instruction. Other writers (e.g., Burlinghame, 1988; Kratzmann, Byrne, & Worth, 1980) have noted that classroom management is a more taxing and more central function for teachers of adolescent students.

Findings from two studies of educators' job satisfaction are relevant. Holdaway's (1978) Alberta research revealed important differences in the nature of satisfaction derived by elementary, junior high, and senior high school teachers. Overall job satisfaction was greatest at the elementary level, and lowest among junior high school teachers. Satisfaction with salary, sabbatical leave arrangements, involvement in decision making, quality of substitute teachers, ability of students, societal attitudes, and inservice education decreased with increasing grade level. In the United States, MacQueen and Ignatovich (1986) also identified statistically significant school-level differences in teachers' overall job satisfaction, as well as in satisfaction with teacher-student interaction, teaching assignment, teaching achievement, and workload. Elementary school teachers were more satisfied overall and with most job facets, although junior and senior high school teachers were relatively more satisfied with their workloads. The United States study, however, was hampered by poor survey response rates. Moreover, neither study examined the job satisfaction experienced by school administrators.

Although based on small samples, two sequential observational studies of high school and elementary school principals in the United States (Kmetz & Willower, 1982; Martin & Willower, 1981) provided some insight into distinctive and common attributes of the principalship at different levels. While principals at the two levels spent similar proportions of time on organizational maintenance tasks and pupil control, curricular and instructional matters absorbed much more time for elementary school principals. As Kmetz and Willower added, the elementary principals "had more contacts with superiors and with parents, and spent more time on the schools' instructional programs and less on extracurricular activities" (p. 73).

Other commentators (e.g., Hallinger & Murphy, 1987; Jones, 1988) have also remarked how instructional leadership, an alleged but ephemeral attribute of effective principals, is effected differently at the two levels: Elementary principals tend to be personally involved in planning and supervising instruction, whereas secondary school principals, who are constrained by larger enrollments as well as subject matter specialization and multilevel organizational structure, delegate leadership responsibilities and exert influence indirectly and symbolically.

Such differences in effective leadership behavior may be attributable to structural disparities between school levels. In an important survey study spanning three school levels (Herriott & Firestone, 1984), teachers in elementary schools exhibited consistently high goal consensus and centralization, whereas senior high schools had low ratings on both variables; junior high schools scored between the two extremes. These researchers speculated about likely reasons for the disparity and advanced the following: influences related to students' differing ages, the comparative diversity of curricula in secondary schools, greater staff specialization and formal departmentalization in secondary schools, as well as school-level differences in school size, sex, and experience of staff, and extracurricular programs. Herriott and Firestone were unwilling to label elementary schools as rational bureaucracies and senior high schools as loosely coupled systems, but proposed these extremes as marked characteristics of the two levels.

The few comparative studies of job satisfaction in schools, aspects of the principalship, and related issues all suggest pervasive differences in the work, experiences and attitudes of elementary, junior high, and senior high school personnel. Hence the description of "the distinction between elementary, junior high, and senior high schools" as "one of the more prominent characteristics of American public schools" (Herriott & Firestone, 1984, p. 49) is understandable. In view of such marked differences in organizational life and administration at different school levels, Griffiths' (1988) support for theories for each organization type is defensible, and Holdaway and Millikan's (1980) call for "more data ... concerning practices in different settings, that is in classrooms, schools and school systems of different type, size and location" (p. 209) seems warranted. Similar recommendations are found in the work of Hallinger and Murphy (1986), Johnson (1987), Jones (1988), and Purkey and Smith (1983), and Kmetz and Willower's (1982) replicatory study likewise prompted them to "underscore the importance of

cumulative and comparative work" (p. 76) that probes differences among schools of different levels.

It is surprising, then, that relatively little attention has been devoted to systematic development of theory and research relating to specific educational levels, in connection with job satisfaction, school effectiveness, or indeed most other aspects of educational organization. For example, Daresh and Liu (1985) noted the elementary school bias in studies of effective schools and were forced to conclude from apparent school-level differences that it is difficult to apply the findings from that body of research literature. They recommended that "the factors that characterize effective elementary schools may indeed be relevant for the analysis of secondary schools, but it is clear that more studies of school effectiveness and instructional leadership must be directed toward middle, junior, and senior high schools" (pp. 1-2). Hallinger and Murphy (1987) and Jones (1988) also expressed this concern.

Aspects of the work and effectiveness of principals at different levels seem to represent a particular void in extant understanding: Leithwood's (1986) review of empirical research literature yielded only 10 studies that explicitly compared the work of elementary and secondary school principals, and he concluded that "the results of these studies were sufficiently tentative to make them an unreliable basis for either understanding or action" (p. 100). There remains a clear need for concerted appraisal of school-level differences in school administration, organization, and attitudes in a variety of locations.

The program of three studies referred to in this article fulfilled this intent. The three studies were conducted in the province of Alberta to examine and compare the perceptions of elementary, junior high, and senior high school principals in relation to their levels of job satisfaction, the effectiveness of their schools, and their effectiveness as leaders. The initial study (Gunn, 1984) also dealt with perceptions of the bases of principals' influence, but this aspect was discarded in favor of more extensive investigation of the satisfaction and effectiveness issues in the two comparative studies that followed.

While the focus of this article is on school-level comparisons, the substantive emphases of the three studies also deserve comment.

First, there is now a well established literature on school effectiveness, particularly in relation to United States schools. Pervading that literature (e.g., Edmonds, 1979; Fullan, 1985; Lezotte, 1986; Purkey & Smith, 1982, 1983) are a few variables alleged to be core components of effectiveness. Edmonds' early commentary on school effectiveness variables is representative; he included (a) high expectations of instructional effectiveness among staff, (b) strong leadership by the principal, (c) an orderly, quiet, and work-oriented atmosphere, (d) an emphasis on academic activities and development, and (e) frequent assessment of students. However, critics of this mutually confirming body of research and theoretical writing (e.g., Clark, Lotto, & Astuto, 1984; Good & Brophy, 1986; Mackenzie, 1983; Rowan, Bossert, & Dwyer, 1983) have noted fundamental research and interpretation problems such as an undue reliance on achievement tests to measure effectiveness, overreliance on elementary schools in studies, unjustified assumptions about causality of effectiveness variables, neglect of interschool

differences during aggregation of data, and assumptions that findings are generalizable to other locations. Some educational writers (e.g., Clark et al., 1984; Hoy & Ferguson, 1985; Ratsoy & Miklos, 1985) have therefore advanced a broader range of criteria for assessing effectiveness, taking into account educational goals as well as the quality of organizational inputs, processes, and other beneficial outcomes. Similarly, writers on program evaluation (e.g., Nevo, 1983) have stressed the importance of appraising the quality of educational program design and processes, as well as outcomes. These expansive views of school effectiveness are more in accordance with the perspectives of organizational effectiveness writers from other management fields (e.g., Cameron, 1986; Cameron & Whetten, 1983; Steers, 1977). In view of this disjunction of perspectives on effectiveness, a major purpose of the studies described below was to examine the performance of schools on a wide range of criteria such as official and operative organizational goals, satisfaction and other desirable characteristics of staff members, leadership effectiveness, appropriate organizational structure, climate and work technology, as well as interactions between the organization and the wider political and social environment. The relevance of those criteria for assessing the effectiveness of schools in Alberta was also examined.

The second substantive matter worthy of mention is the choice of effectiveness and job satisfaction as variables for the three studies. It is common to link school effectiveness with the principal's effectiveness in emphasizing goals, exercising instructional leadership, and promoting collegial work (e.g., Bossert, Dwyer, Rowan & Lee, 1982; Duignan, 1985; Johnson & Snyder, 1985; Little, 1982; Rosenholtz, 1985). Organizational effectiveness writers (e.g., Cameron & Whetten, 1983; Mott, 1972; Steers, 1977) have highlighted also the leader's effectiveness in decision making and establishing open communication, adaptability, and flexibility in the organization. With regard to job satisfaction research, investigators in fields other than education (e.g., Lawler & Porter, 1967, 1976) have tried to identify a potential role of satisfaction in enhancing the productivity of workers; and organizational effectiveness researchers (e.g., Steers, 1977) have tended to treat job satisfaction as one of the dimensions of effective organizational performance. Of course, some writers (e.g., Brayfield & Crockett, 1970; Gross & Etzioni, 1985; Kelly, 1980) have disputed claims of any substantial and systematic link between job satisfaction and performance. Despite the importance and extent of this research and debate, the possibility of a relationship between job satisfaction and effectiveness seems to have attracted little attention from researchers in educational administration. Accordingly, an investigation in connection with effectiveness and the satisfaction of school principals was warranted.

Methods Used for the Studies

Gunn (1984) elicited questionnaire responses from 133 (85.8%) of the 155 senior high school principals (grades 10-12) in Alberta. Using a scale of 1 (highly dissatisfied) to 6 (highly satisfied), respondents rated their overall job satisfaction and satisfaction on 35 individual work facets, the overall effectiveness of their schools and effectiveness on an array of nine organizational

performance criteria, and their overall effectiveness as leaders as well as their effectiveness on nine criteria commonly associated with effective school leaders. Subsequent interviews with 10 senior high school principals confirmed and probed some of the major findings.

Subsequently, two parallel studies were conducted in elementary schools (Johnson, 1988) and junior high schools (Sroypan, 1988). Pilot testing of instruments and interview methods for those studies called into question the need for a scale with six alternatives for rating satisfaction and effectiveness; however, in the light of the foregoing review, the benefit available from direct comparison of elementary, junior high, and senior high school findings justified the retention of Gunn's (1984) six-point scale. This decision to pursue comparative research did not preclude considerable expansion of the inquiry in other ways.

Preparation for the elementary school study included reviews of research literature on effectiveness and job satisfaction, exploratory interviews, and two pilot studies of a greatly expanded version of Gunn's (1984) survey instrument. Questionnaires were then distributed to 131 principals of elementary schools (grades k-6) in Alberta—a 20% random sample of the 654 principals in the province. Responses were received from 112 (85.5%) of the principals surveyed. The same questionnaire was sent to all 94 junior high school principals (grades 7-9) in that province, to which 84 principals (89.4%) responded. This expanded questionnaire retained Gunn's provision for overall satisfaction and effectiveness ratings but invited satisfaction ratings on 41 job facets, school effectiveness ratings on 38 criteria, and principalship effectiveness ratings on 29 criteria. Table 1 summarizes the structure of data collection for the three studies.

In each of the three studies, follow-up interviews were conducted with 10 principals in order to explore outstanding findings and other important issues in greater depth than was possible with the questionnaire. Interviewees were chosen to include known personal characteristics of principals and organizational attributes of schools in approximate proportion to the

Table 1
Structure of Data Collection from Principals

	Elementary	Junior High	Senior High
Questionnaires			
Population of schools/principals	654	94	155
Questionnaires distributed	131	94	155
Questionnaires returned	112 (85.5%)	84 (89.4%)	133 (85.8%)
Job facets investigated	41	41	35
School effectiveness criteria investigated	38	38	9
Principal effectiveness criteria investigated	29	29	9
Interviews			
No. conducted	10	10	10

provincial random sample or population. Although this strategy did not give the interview findings statistical generalizability, it did help to ensure that a suitable range of perspectives would be taken into account in this detailed investigation. To this end, each interview sample of 10 principals was chosen with school setting, type and size of school (as measured by number of teachers), as well as gender of the principals in mind. The elementary school study is indicative: Those four aspects were accommodated generally in accordance with their appearance in responses from the random sample (see Table 2).

The elementary and junior high school studies also investigated the importance of job facets/criteria for overall satisfaction/effectiveness, and a number of commonalities and discrepancies between those levels were noted. Another important addition was the inclusion of a check on principals' perceptual biases; equivalent questionnaire data about the effectiveness of schools and principals were obtained from teachers and area superintendents associated with the schools in one major city. Of the 34 elementary schools in the study which fell in that city region, responses were received from 30 principals (88.2%), from 262 (66.7%) of the 391 teachers in 32 schools, and from nine area superintendents responsible for 33 (97.1%) of the schools. In

Table 2
Characteristics of Schools and Principals in Elementary School Interviews
($N = 10$)

Characteristic	Questionnaire Sample	Interview Sample	
	%f	f	%f
School Setting			
City	66.1	6	60.0
Town	20.5	2	20.0
Rural	13.4	2	20.0
Type of School System			
Public District	50.0	4	40.0
Separate District	20.5	2	20.0
County	17.0	2	20.0
Division	12.5	2	20.0
Number of Full-Time Equivalent Teachers			
Fewer than 10	27.5	3	30.0
10-19	51.4	4	40.0
20-29	19.3	3	30.0
30 or more	1.8	-	-
Sex of Principal			
Female	19.6	2	20.0
Male	80.4	8	80.0

the junior high school study, responses were received from 21 (95.5%) of the 22 principals, 132 (52%) of 254 teachers in 21 schools, and nine area superintendents representing all 22 schools. The substantial support by educators and administrators approached in these studies is indicative of a widespread professional regard for the importance of the job satisfaction and effectiveness issues.

Numerical data obtained from principals were analyzed using the same procedures for all three studies: Mean ratings were determined for global variables as well as individual facets/criteria. Means were also calculated for ratings of importance of each facet/criterion. Spearman and Kendall rank-order correlations were performed to compare the rank ordering of items for perceived satisfaction/effectiveness and importance. (For this analysis, the criterion "displaying leadership by the principal" was compared with principals' mean ratings on the item "your overall effectiveness as a leader.") Data obtained from teachers and area superintendents were initially partitioned by school so that school means could be calculated. Resultant figures permitted comparable means to be determined for the various constituencies (i.e., without influence from differences in school size).

With regard to reliability of questionnaires, and therefore of the comparison, split-half correlations using an odd-even split of items indicated high measures of reliability in all three studies. For example, correlation coefficients for the job satisfaction, school effectiveness, and principalship effectiveness sections of the survey of elementary school principals were .96, .95, and .95. Similar figures were obtained for the other educational levels and other constituencies. Validity was enhanced by questionnaire development based on previously validated research instruments (e.g., Holdaway, 1978; Hoy & Ferguson, 1985; Ratsoy & Miklos, 1985; Rice, 1978); systematic and thorough pilot testing; and triangulation through the use of multiple constituencies, multiple data collection methods, and multiple researchers.

Before documenting results and comparisons from the three studies, a note of caution is in order. Clearly the extent and validity of the comparisons presented in this article are limited by possible effects associated with changing attitudes and circumstances since the time of Gunn's 1984 survey and interviews, and by the more limited investigation of effectiveness in that study. In addition, Gunn's data collection was confined to responses by principals, so a possible halo effect in those findings could not be assessed.

Results

Job Satisfaction of Principals

Mean responses of principals from sampled elementary schools and populations of junior high and senior high schools across Alberta are displayed in Table 3. Means for overall job satisfaction were similar for the three levels (elementary 5.1, junior high 5.2, senior high 5.2) with all three groups expressing moderate satisfaction with their work; 32%, 36%, and 39% of the respondents regarded themselves as highly satisfied. With regard to specific facets, responses at all levels exceeded the six-point scale mean of 3.5 with the lowest mean recorded by any group on any item being 3.8.

Comparison of responses on specific facets revealed certain common perceptions as well as some marked school-level discrepancies. The three

Table 3
Principals' Levels of Job Satisfaction

Job Facet	Mean Levels of Satisfaction		
	Elementary ($N = 112$)	Junior High ($N = 84$)	Senior High ($N = 133$)
Working Conditions			
1. The way consultation between board and teachers about working conditions is conducted in the school system	4.3	4.3	3.8
2. The salary the principal receives	4.4	4.1	4.7
3. Fringe benefits under the contract	4.6	4.3	4.7
4. Quality of custodial services in the school	4.6	4.7	4.8
5. The number of hours the principal is required to work	4.2	4.5	4.4
6. The principal's physical working conditions	4.6	4.9	4.7
7. Availability of clerical staff to assist the principal	4.7	4.7	4.9
Personnel-Related Matters			
8. The principal's working relationships with teachers	5.4	5.5	5.4
9. The principal's social relationships with teachers	5.0	5.0	5.2
10. The teaching competence of teachers	5.2	5.0	5.1
11. The competence of teachers in handling professional duties outside their classrooms	5.0	4.8	4.7
12. Attitudes of teachers toward ongoing professional improvement	4.9	4.6	-
13. The help the principal gives teachers and students to succeed	5.0	4.9	-
14. Attitudes of teachers toward change	4.6	4.5	4.5
15. Satisfaction and morale of the staff (SH: Morale of staff)	5.2	5.1	5.0
Student-Related Matters			
16. The principal's relationships with students	5.4	5.4	5.4
17. The attitudes of students toward education	4.6	4.6	4.4
18. Satisfaction and morale of students (SH: Student "spirit")	5.0	5.0	4.7
19. Achievement of students	4.8	4.9	-
Role-Related Matters			
20. The principal's freedom to change the school program	4.6	4.6	4.8
21. The principal's freedom to allocate teaching assignments	5.0	5.4	5.4
22. The principal's involvement in hiring teachers for the school	4.5	4.6	4.8
23. Authority associated with the principal's position	4.9	5.1	5.1
24. The principal's involvement in budget preparation	4.7	4.9	4.7
25. The principal's responsibility for formal teacher evaluation	5.1	5.2	-

Table 3 (continued)
Principals' Levels of Job Satisfaction

Job Facet	Mean Levels of Satisfaction		
	Elementary ($N = 112$)	Junior High ($N = 84$)	Senior High ($N = 133$)
District-Related Matters			
26. The principal's relationship with the superintendent	5.0	5.1	4.9
27. The principal's relationships with other central office staff	4.9	5.2	4.9
28. The principal's involvement in decision making at the district level	4.3	4.3	4.2
29. Availability of useful advice to assist the principal with problems	4.7	4.8	4.5
30. Opportunities for useful inservice education for the principal	4.7	4.9	4.2
31. Expectations of the school board for the principal	4.4	4.6	4.6
32. The methods used to evaluate principals	4.3	4.6	4.2
33. Attitudes of school board administrators toward school teachers and administrators	4.7	4.9	4.1
Occupation-Related Matters			
34. Attitudes of parents toward the school	5.1	5.1	4.9
35. The principal's social position in the community	5.0	5.0	5.1
36. Achievement of the principal's own professional objectives	5.0	5.1	-
37. The principal's sense of accomplishment as an administrator	5.1	5.2	5.0
38. Recognition by others of the principal's work	4.6	4.8	4.8
39. The effect of the job on the principal's personal life	4.3	4.5	4.5
40. Opportunities for advancement as an administrator	4.5	4.5	4.6
41. Successful completion of projects and tasks	5.1	5.0	-
42. Your overall feeling of satisfaction with your job	5.1	5.2	5.2

Notes:
1. Means are based on ratings on a six-point scale ranging from 1, highly dissatisfied, to 6, highly satisfied.
2. Items are taken from the elementary school instrument. Parentheses indicate differences in wording for equivalent items in junior high (JH) and senior high (SH) school instruments.

groups all exhibited particular satisfaction with their working relationships with teachers (5.4, 5.5, 5.4), their relationships with students (5.4, 5.4, 5.4), and rather less consistently their freedom to allocate teaching assignments (5.0, 5.4, 5.4). All were much less satisfied with the various aspects of their working conditions (especially with board-staff consultation over working conditions, 4.3, 4.3, 3.8), with most district-related matters (particularly their involvement in central office decision making, 4.3, 4.3, 4.2), and with students' attitudes about education (4.6, 4.6, 4.4).

Junior high principals were highest on 15 job facets, senior high principals on eight facets, and elementary principals on six facets; other dimensions had tied mean ratings. Elementary principals tended to be the most satisfied group in respect of matters relating to staff and students, but least satisfied in role- and occupation-related matters. More specifically, their mean satis-

faction level was noticeably higher than that of junior high school principals in connection with teachers' attitudes about ongoing professional growth (4.9, 4.6, n.a.). On the other hand, elementary school principals were considerably less satisfied with their freedom to allocate teaching assignments (5.0, 5.4, 5.4), their physical working conditions (4.6, 4.9, 4.7), their involvement in hiring teachers (4.5, 4.6, 4.8), their relationships with central office staff other than the superintendent (4.9, 5.2, 4.9), and the number of hours they were required to work (4.2, 4.5, 4.4).

Principals of junior high schools were more satisfied with matters pertaining to the district and their administrative role in the school, as well as on other occupation-related facets. They were less satisfied in many personnel matters. In specific terms, junior high principals were substantially more satisfied with central office attitudes toward school staff members (4.7, 4.9, 4.1); their freedom to allocate teaching assignments (5.0, 5.4, 5.4); their workloads (4.2, 4.5, 4.4); their relationships with central office personnel (4.9, 5.2, 4.9); and their access to professional advice (4.7, 4.8, 4.5). They were also more satisfied with the methods used for evaluating principals at that level (4.3, 4.6, 4.2). Salaries (4.4, 4.1, 4.7) and fringe benefits (4.6, 4.3, 4.7) and teachers' attitudes about ongoing professional improvement (4.9, 4.6, n.a.), however, provided less job satisfaction for the principals of junior high schools.

With the exception of board-staff negotiations about conditions (4.3, 4.3, 3.8), satisfaction ratings for various aspects of the principal's working conditions tended to be highest among senior high principals. However, that group also had the lowest satisfaction levels on matters involving the school district. With regard to individual facets, differences in favor of senior high school principals included their salary (4.4, 4.1, 4.7) and involvement in hiring teachers (4.5, 4.6, 4.8). On the other hand, they were least satisfied with many other job facets, most particularly with school board attitudes toward teachers and administrators (4.7, 4.9, 4.1); board consultation with teachers over working conditions (4.3, 4.3, 3.8); and inservice provisions for principals (4.7, 4.9, 4.2). Other relatively less rewarding facets for the senior high school principals were teachers' competence outside their classrooms (5.0, 4.8, 4.7); the satisfaction and morale of students (5.2, 5.1, 5.0); relationships between the principal and central office staff (4.9, 5.2, 4.9); the availability of advice for the principal (4.7, 4.8, 4.5); and the evaluation procedures used to assess senior high school principals (4.3, 4.6, 4.2).

The follow-up interviews also revealed some differing dimensions and levels of satisfaction, particularly at the elementary and junior high levels, for three respondents had had principalship experience in both types of schools. One concentrated on the satisfaction derived from interaction with students at the different stages. His current satisfaction as an elementary school principal had arisen merely from "closeness to children in this important growing and molding stage" of their lives and education. In contrast, his job satisfaction as a junior high school principal had been "more subject-oriented." He also elaborated on the satisfaction of witnessing the rapid growth of the older pupils:

> [At the start of the year we'd say] "we've got these wild and woolly junior high types. Let's see how much we can accomplish in three years while we sit on them in one sense and stretch them in the other".... [From the students I found] the satisfaction of seeing the tremendous growth ... over the three-year time frame with regard to children coming in—not being able to do anything but make squawks on the musical instrument, [having to] be sure they get their gym shorts on one leg at a time, the very feeble fumbling with the science equipment ("Don't burn your eyebrows when you light the bunsen burner")—to some very sophisticated things three years later. And the social, the maturational aspect would give a great deal of satisfaction. And being able to master the subject matter as well as keeping the lid on what some people call "the greatest disaster in education"—the development of the junior high student.

A second principal cited behavioral problems as a particularly dissatisfying feature of the junior high school—a feeling that was displaced at the elementary level by

> being able to accomplish something ... a person got to spend so much more time in the classrooms. Then it was a really satisfying experience to find out all the good things that were going on ... where their [teachers'] strengths were ... getting into more educational things—planning and so on—rather than just discipline [as before].

This perception accords with Leithwood's (1986) identification of onerous disciplinary responsibilities for junior high school principals. On the other hand, a third principal in the study found other time pressures greater, and more dissatisfying, at the elementary level:

> Time is the biggest problem—the fact that you have these ideas, and staff say, "Wouldn't it be nice to do this," and it is within the capability of the school, of the staff, except that there is no time to do them properly—and I do not get any satisfaction out of doing a job poorly. So, rather than do a job poorly, I will frequently not do it at all. And I think that's the one thing that's much more so in elementary schools than in any other schools.... The time pressure, the lower [school level] you go, becomes greater and greater. The fact that I teach 70% of the time gives you some idea of the time I have to spend on administrative tasks.... and there really isn't a lot of time to do long-range planning.

In order to identify the most important contributors to principals' overall job satisfaction, the elementary and junior high school principals were also asked to rate the importance of each facet for overall job satisfaction, using a scale ranging from 1, Not Important, to 4, Extremely Important. Principals at both levels considered staff-related matters to be vital for their job satisfaction: Variables concerning principals' working relationships with teachers, the teaching competence of teachers, and staff satisfaction and morale had means of 3.9 or 4.0, and percentages answering extremely important ranged from 93% to 99%. They also rated parental attitudes (3.9, 3.8); successful completion of projects and tasks (3.8, 3.6); the sense of accomplishment derived from administration (3.9, 3.9); and the availability of clerical staff (3.8, 3.8) as particularly important elements of their overall satisfaction as principals. Conversely, respondents at both school levels considered the principal's social relationships with teachers (2.8, 2.9); social position in the community (2.6, 2.9); opportunities for advancement (3.1, 3.2); and involvement in central office decision making (3.2, 3.1) to be least

important. Comparison of mean importance ratings by the two groups of respondents revealed no substantial discrepancies in perceptions, and at each level the most important factors were also rated highly for satisfaction. However, the principals in these studies tended to rate many of the items as at least moderately important for their overall job satisfaction.

Principals' Perceptions of School Effectiveness

In global terms, principals in elementary, junior high, and senior high schools all rated their schools moderately highly on the effectiveness scale (5.2 on the six-point scale); 22%, 29%, and 27% of principals rated their schools as highly effective, and schools in general were judged to be somewhat more than moderately effective overall. School-level comparisons based on individual criteria were hampered by the greatly expanded array of criteria used in the 1986-87 instrument for elementary and junior high schools. Nevertheless, analysis revealed a broad pattern of reasonably consistent mean ratings

Table 4
Principals' Perceptions of School Effectiveness

Effectiveness Criterion	Means of Effectiveness Ratings		
	Elementary ($N = 112$)	Junior High ($N = 84$)	Senior High ($N = 133$)
1. Setting school goals	5.0	5.1	-
2. Communicating school goals to students	4.7	4.8	4.7
3. Maintaining high expectations of students	5.1	5.2	-
4. Preparing students for junior high school (JH: Senior high) (SH: [a] employment; [b] success in postsecondary institutions)	4.9	5.2	4.5(a) 5.2(b)
5. Emphasizing academic subjects	5.2	5.3	-
6. Encouraging academic success	5.2	5.2	-
7. Frequently evaluating students according to defined standards	4.8	5.0	5.0
8. Maximizing achievement in reading and writing (SH: Providing students with satisfactory skills in language)	5.2	4.8	4.9
9. Maximizing achievement in mathematics	5.1	4.9	4.9
10. Maximizing development of social skills	5.0	5.0	-
11. Maximizing development of creativity	4.7	4.6	-
12. Providing worthwhile extracurricular activities	4.9	5.3	5.1
13. Maximizing student satisfaction and morale	5.1	5.2	-
14. Experiencing minimal deviant behavior among students	5.1	5.0	-
15. Enforcing behavioral rules among students	5.1	5.3	-
16. Maintaining an appropriate school climate	5.4	5.4	-
17. Acknowledging the achievements of staff and students	5.3	5.1	-
18. Maximizing the job satisfaction of individual staff members	4.9	4.9	-
19. Maximizing the morale of the staff as a group	5.1	5.0	-
20. Maintaining low turnover of staff	5.2	5.2	-

Table 4 (continued)
Principals' Perceptions of School Effectiveness

Effectiveness Criterion	Means of Effectiveness Ratings		
	Elementary ($N = 112$)	Junior High ($N = 84$)	Senior High ($N = 133$)
21. Maintaining high expectations of staff	5.2	5.2	-
22. Displaying staff commitment to the school	5.0	5.1	-
23. Showing a high level of staff motivation	5.0	5.0	-
24. Displaying staff cooperation and cohesion	5.2	5.0	-
25. Discussing, planning, and preparing lessons and instructional materials collaboratively	4.7	4.7	-
26. Constructively evaluating the work of teachers	4.9	5.0	-
27. Keeping up to date with new methods and technology	4.9	4.8	-
28. Demonstrating thorough knowledge of subject matter	5.0	5.0	-
29. Using appropriate teaching methods	5.1	5.0	-
30. Making efficient use of staff time	5.1	5.0	-
31. Making efficient use of resources	5.0	4.9	-
32. Coping with emergencies and overloads of work (SH: Handling unexpected overloads of work or emergencies)	5.0	4.9	5.3
33. Taking advantage of staffing changes	5.0	5.1	-
34. Responding to changing community expectations	5.0	5.0	-
35. Maintaining communication with the community (SH: Formal communication between teachers and parents)	5.3	5.2	4.5
36. Obtaining support from the community	5.3	5.2	-
37. Maximizing the satisfaction of parents	5.2	5.0	-
38. Maximizing the satisfaction of the nonparent community	4.3	4.4	-
39. The overall effectiveness of your school	5.2	5.2	5.2

Note: Effectiveness means are based on ratings on a six-point scale ranging from 1, highly ineffective, to 6, highly effective.

across the studies; elementary and junior high schools were highest and lowest in effectiveness on approximately equal numbers of criteria. Based on comparisons in only eight domains of the school's work, senior high schools were at the top of the effectiveness comparisons on one item and at the bottom on four. Table 4 displays these findings.

Principals at both elementary and junior high levels judged their schools most favorably in maintaining a suitable organizational climate (5.4, 5.4); obtaining support from the community (5.3, 5.2); communicating with the community (a perception not shared in senior high schools, 5.3, 5.2, 4.5); and emphasizing academic instruction (5.2, 5.3) and academic attainment (5.2, 5.2). At the other extreme, both elementary and junior high school principals assigned relatively low effectiveness ratings to satisfying the nonparent community (4.3, 4.4), and their ratings for developing students' creativity (4.7, 4.6) also tended to be lower than on other criteria. Even so, elementary,

junior high, and senior high school principals' effectiveness ratings on these and all other items still exceeded the slightly effective level; in absolute terms, these perceptions reflected a view that schools across the educational spectrum were reasonably effective in all dimensions examined.

Elementary schools emerged as more effective than junior and senior high schools in maximizing attainment in reading and writing (5.2, 4.8, 4.9). Elementary and junior high schools were substantially more effective in maintaining communication with the community than were senior high schools (5.3, 5.2, 4.5); nevertheless, the slight difference in wording of items about community liaison may have had some bearing on this finding. Junior high school principals' responses were highest in the areas of extracurricular activities (4.9, 5.3, 5.1) and preparing students for subsequent commitments (4.9, 5.2, 4.5/5.2). In the latter regard, senior high school principals responded separately about preparation for employment and postsecondary education; schools at that level seemed to equip students well for higher education but performed less effectively in preparing school leavers for the world of work. On the other hand, the senior high level was associated with greater flexibility in coping with work overloads and emergencies (5.0, 4.9, 5.3).

At the elementary and junior high levels, principals also rated the importance of 39 criteria (including effective leadership by the principal) for judging the overall effectiveness of schools. As with job satisfaction, a four-point importance scale was used. Principals in the senior high school study were only invited to advance three criteria that they perceived to be most important for this purpose, and support for each criterion was quantified in percentage frequencies of mention. Within the constraints of those different data collection strategies, there emerged some general consensus as well as isolated differences of opinion about the most important school effectiveness criteria. Senior high school principals most frequently (65% of respondents) proposed staff and student satisfaction and morale as central issues, and this finding was supported in high ratings of equivalent criteria by respondents at the elementary and junior high levels (maximizing student satisfaction and morale, 3.9, 3.9; maximizing staff job satisfaction, 3.9, 4.0). Many of the senior high school principals (54%) also commended preparation for further education as a priority, although principals at the two lower educational levels were less adamant about the importance of this concern (3.4, 3.5). (Comparability on this criterion was limited by the dual focus of the finding from senior high school responses.)

On the other hand, senior high school principals made no mention of many other criteria that principals in elementary and junior high schools rated as important, particularly the high ratings both groups assigned to maintaining an appropriate school climate, acknowledging achievements of staff and students, displaying leadership by the principal, using appropriate teaching methods, and maintaining high expectations of students and staff (all means 3.9 at both levels). Indeed elementary and junior high school principals rated each of the 39 criteria as important to some degree; hence criteria other than the four recorded in the senior high school findings may

also be of consequence for judging effectiveness at that school level. At the same time, emphases were evident in the elementary and junior high school results: Respondents had much less regard for the importance of nonparent community satisfaction (3.0, 3.0); low turnover of staff (3.2, 3.2); collaborative work by staff (3.3, 3.4); regular evaluation of students (3.2, 3.5); and academic emphasis (3.5, 3.3) than for the other, more highly rated criteria.

Comparison of school effectiveness means with importance means at each level was also revealing. For elementary schools, a Spearman rank-ordered correlation coefficient of .62 ($p<.01$) indicated a high degree of association of effectiveness and importance rankings. This was tempered, however, by the results of Kendall correlation analysis ($r=.46$; $p<.01$), a more meaningful procedure in this instance, where the data included several tied ranks. With regard to performance on individual criteria, the school climate variable emerged as the most effective dimension and the most important criterion on which to base school effectiveness appraisals. Four other variables also exhibited broadly consistent effectiveness and importance rankings of means: acknowledging the achievements of staff and students (effectiveness rank 4 of 39 items; importance rank 8); displaying staff cooperation and cohesion (6; 10.5); maximizing achievement in reading and writing (8; 3); and maintaining high expectations of staff (9; 10.5). On the other hand, elementary schools were judged to be relatively ineffective in some important areas: maintaining high expectations of students (16.5; 2); displaying leadership by the principal (14; 4); maximizing student satisfaction and morale (13; 5); maximizing staff morale (20; 6); using appropriate teaching methods (18; 7); and maximizing achievement in mathematics (15; 9).

At the junior high level, the conjunction of school effectiveness and importance rankings was much lower (Spearman $r=.28$, $p<.01$; Kendall $r=.21$, $p<.01$). As with elementary schools, school climate was rated as highly effective as well as important (1; 2.5) as was maintaining high expectations of students (8.5; 4). However, several other criteria were rated as important but relatively ineffective, most particularly maximizing staff morale (18.5; 1), acknowledging achievements of staff and students (14; 2.5), maximizing the job satisfaction of staff (28; 7), and using appropriate teaching methods (20.5; 10).

The importance rankings in these studies resembled only partially the "recipes" commonly appearing in some school effectiveness literature. Parallel factors were school climate (elementary school importance rank 1; junior high 2.5); the principal's leadership (4; 5); and high expectations of students (2; 4). However, other widely commended criteria were not highly ranked: evaluation of students (37; 30); academic emphasis (30; 37); and encouraging academic success (16.5; 18.5). Additional important factors also emerged as central to school effectiveness appraisal: staff morale (6; 1); student satisfaction and morale (5; 8); and, at the elementary level, achievement in reading and writing (3; 12.5).

Principals' Perceptions of Their Effectiveness as Leaders

As with their mean ratings of overall effectiveness of schools, principals of the elementary, junior high, and senior high schools across Alberta had common views about their own overall effectiveness. Means for all three groups were 5.1, slightly beyond the moderately effective level on the six-point scale used in each study, with 17%, 21%, and 21% rating themselves as highly effective school administrators. Further comparisons are limited by the restricted selection of criteria used in the senior high study; but, as the data in Table 5 indicate, some patterns could be discerned.

As with the global assessments, there was some agreement about the range of effectiveness criteria used for self-appraisal. Across the school levels, assessments of effectiveness were highest for making timely, appropriate, and acceptable decisions (5.3, 5.3, 5.3) and providing an appropriate work environment for students and staff (5.3, 5.2, 5.4); and elementary and junior high school principals' perceptions were also especially favorable regarding exercising exemplary behavior at school (5.4, 5.3), communicating with staff (5.3, 5.3), encouraging high expectations of students (5.1, 5.3), and allocating tasks appropriately among staff (5.1, 5.3). Principals, however, rated their effectiveness in enlisting the support of the nonparent community considerably lower than on other criteria (4.3, 4.3), although their common judgment was still in the range of effective performance.

Substantial school-level differences in performance did occur on certain criteria. A major discrepancy related to senior high school principals' comparatively low mean rating of effectiveness in improving the performance of staff (4.9, 5.0, 4.5). Conversely, these principals were the most positive group in respect of responding to changing circumstances and expectations in the organizational environment (4.9, 4.8, 5.1).

Principals in the elementary and junior high school studies also rated the importance of 29 criteria for assessing the overall effectiveness of principals. Most respondents regarded all criteria as important to some degree. Respondents at both levels assigned particularly high importance ratings to communicating with staff (4.0, 3.9 on the four-point scale); encouraging high expectations of students (3.9, 3.9); and making timely, appropriate, and acceptable decisions (3.9, 3,9). The lowest importance ratings were for enlisting the support of the nonparent community (3.0, 3.0), but this still represented a perception of moderate importance. Other relatively low mean ratings included communicating with groups in the community (3.5, 3.3) and responding to external expectations and changes (3.4, 3.4).

For elementary schools, comparison of effectiveness and importance means indicated a high correlation between the two sets of variables: Spearman $r=.65$ and Kendall $r=.51$ (both $p<.01$). On individual criteria, principals rated themselves as highly effective on the following highly important criteria: communicating with staff (effectiveness rank 3 of 29 items; importance rank 1); making timely and appropriate decisions (2; 4); promoting high expectations of students (10; 3); fostering high staff and student morale (8; 5); and communicating with students (5.3; 9). Conversely, elementary school principals judged themselves to be relatively ineffective in some im-

Table 5
Principals' Perceptions of Their Effectiveness as Leaders

Effectiveness Criterion	Means of Effectiveness Ratings		
	Elementary ($N=112$)	Junior High ($N=84$)	Senior High ($N=133$)
1. Coordinating the development of school goals	5.1	5.1	-
2. Publicizing school goals	5.0	4.9	-
3. Promoting the achievement of school goals (SH: Directing the efforts of teachers toward school goals)	5.1	5.0	-
4. Exercising instructional leadership	5.0	5.0	-
5. Making timely, appropriate, and acceptable decisions	5.3	5.3	5.3
6. Improving the performance of staff	4.9	5.0	4.5
7. Evaluating staff members	5.0	5.1	-
8. Providing feedback to staff	5.1	5.1	-
9. Communicating with staff	5.3	5.3	-
10. Encouraging high expectations of students	5.1	5.3	-
11. Providing an appropriate work environment for students and staff	5.3	5.2	5.4
12. Promoting high expectations among staff members	5.2	5.2	-
13. Fostering high morale among staff and students (SH: Improving the morale of teaching staff [only])	5.2	5.1	5.0
14. Communicating with students	5.2	5.2	-
15. Obtaining qualified staff	5.0	4.9	-
16. Allocating tasks appropriately among staff	5.1	5.3	-
17. Allocating resources	5.2	5.2	-
18. Coordinating and integrating the activities of staff groups/departments	4.9	5.0	5.0
19. Coping with uncertainty and conflict	5.0	5.2	5.1
20. Coping with emergencies and overloads of work	5.1	5.0	-
21. Fostering the professional growth of staff members	5.0	5.0	-
22. Exercising exemplary behavior at school	5.4	5.3	-
23. Increasing the job satisfaction of staff members	5.0	5.0	4.9
24. Working with teachers to develop or change policies	5.0	5.0	5.2
25. Identifying community expectations	4.9	4.8	-
26. Adapting policies and procedures to respond to external changes and expectations (SH: To accommodate change initiated by the external environment)	4.9	4.8	5.1
27. Communicating with community groups	4.9	4.7	-
28. Enlisting the support of parents	5.2	5.1	-
29. Enlisting the support of the nonparent community	4.3	4.3	-
30. Your overall effectiveness as a leader	5.1	5.1	5.1

portant areas: obtaining qualified staff (17; 2); providing feedback to staff (13; 6); and improving the performance of staff (28; 7.5).

The correspondence of effectiveness and importance rankings was not so close at the junior high level: Spearman $r=.55$ and Kendall $r=.43$ (both $p<.01$). As with elementary schools, communication with staff attracted

relatively high effectiveness and importance ratings (2; 1). Also highly rated for effectiveness and importance were the principal's decision making (4; 3), encouragement of high expectations among students (5; 2) and staff (8.5; 4.5), and communication with students (7; 10). Very important criteria that were rated as relatively ineffective related to improving the performance of staff (17; 4.5), obtaining qualified staff (20; 6), fostering high staff and student morale (13; 7.5), and coordinating the development of school goals (14; 9).

Teachers' and Area Superintendents' Perceptions of School Effectiveness

In the elementary and junior high school studies, parallel data about effectiveness of schools and principals were obtained from teachers and area superintendents associated with the schools in one large city. Comparisons of these response means revealed some clear patterns in the perceptions of educational constituencies.

Teachers rated school effectiveness on the same criteria as did principals; the mean ratings are displayed in Table 6. Unlike the comparative assessments of principals, junior high teachers tended to judge effectiveness less positively than did the elementary school teachers. Of the 38 items on which responses were invited, lower ratings were assigned by teachers in the junior high schools in all but four instances. (Ratings on one further item, displaying leadership by the principal, are dealt with in the next section.) Moreover, most of the differences were substantial: The greatest disparities related to effectiveness in maximizing staff morale (4.7, 4.1); maintaining low staff turnover (4.8, 4.3); and maximizing students' attainment of important social skills (4.9, 4.3). Twenty-two other mean ratings by junior high school teachers were also at least 0.3 (on the six-point scale) below those of colleagues in elementary schools. This pattern of school-level differences was also exhibited in a slightly lower overall effectiveness rating by junior high school teachers (5.0, 4.9). Only in the matter of providing worthwhile extracurricular activities did junior high schools emerge as substantially superior (4.6, 5.0); preparation for the succeeding school level was another dimension which favored those schools slightly (4.8, 4.9).

One common feature in the responses was the relatively low ratings assigned at each school level to effectiveness in maximizing the satisfaction of the nonparent community (4.3, 4.0), preparing work collaboratively (4.3, 4.0), maximizing staff satisfaction (4.6, 4.2) and morale (4.7, 4.1), and exhibiting minimal deviant behavior by students (4.7, 4.3). Even so, mean ratings on these items were at the slightly effective level or beyond. Criteria on which the two groups judged effectiveness highest also tended to coincide: Both elementary and junior high school teachers favored the performance of their schools in demonstrating thorough knowledge of subject matter (5.0, 5.0); maintaining communication with the community (5.2, 4.9); and using appropriate teaching methods (5.1, 4.9).

Equivalent data were gathered from area superintendents on a more limited array of school effectiveness items—those on which they could be expected to make judgments (Table 7). Area superintendents rated the

elementary and junior high schools as equally effective overall—both slightly less than moderately effective. According to these respondents, the dimensions of greatest and least effectiveness differed according to school level: Elementary schools were perceived to be particularly effective in setting school goals (5.0) and maintaining high expectations of staff (5.0), whereas junior high schools performed best in taking advantage of staff changes (5.3),

Table 6
Teachers' Perceptions of School Effectiveness

Effectiveness Criterion	School Means of Effectiveness Ratings	
	Elementary ($N=32$)	Junior High ($N=21$)
1. Setting school goals	5.1	4.7
2. Communicating school goals to students	4.8	4.6
3. Maintaining high expectations of students	5.0	4.7
4. Preparing students for junior high school (JH: Senior high)	4.8	4.9
5. Emphasizing academic subjects	5.1	4.9
6. Encouraging academic success	5.1	5.0
7. Frequently evaluating students according to defined standards	4.8	4.8
8. Maximizing achievement in reading and writing	5.1	4.7
9. Maximizing achievement in mathematics	5.1	4.9
10. Maximizing development of social skills	4.9	4.4
11. Maximizing development of creativity	4.5	4.1
12. Providing worthwhile extracurricular activities	4.6	5.0
13. Maximizing student satisfaction and morale	5.0	4.7
14. Experiencing minimal deviant behavior among students	4.7	4.3
15. Enforcing behavioral rules among students	4.8	4.4
16. Maintaining an appropriate school climate	5.0	4.6
17. Acknowledging the achievements of staff and students	4.9	4.6
18. Maximizing the job satisfaction of individual staff members	4.6	4.2
19. Maximizing the morale of the staff as a group	4.7	4.1
20. Maintaining low turnover of staff	4.8	4.3
21. Maintaining high expectations of staff	4.9	4.7
22. Displaying staff commitment to the school	4.9	4.6
23. Showing a high level of staff motivation	4.9	4.5
24. Displaying staff cooperation and cohesion	4.8	4.5
25. Discussing, planning, and preparing lessons and instructional materials collaboratively	4.3	4.0
26. Constructively evaluating the work of teachers	4.6	4.4
27. Keeping up to date with new methods and technology	4.9	4.6
28. Demonstrating thorough knowledge of subject matter	5.0	5.0
29. Using appropriate teaching methods	5.1	4.9
30. Making efficient use of staff time	4.9	4.5
31. Making efficient use of resources	4.8	4.6
32. Coping with emergencies and overloads of work	4.7	4.3

Table 6 (continued)
Teachers' Perceptions of School Effectiveness

Effectiveness Criterion	School Means of Effectiveness Ratings	
	Elementary ($N = 32$)	Junior High ($N = 21$)
33. Taking advantage of staffing changes	4.7	4.3
34. Responding to changing community expectations	4.8	4.6
35. Maintaining communication with the community	5.2	4.9
36. Obtaining support from the community	5.0	4.6
37. Maximizing the satisfaction of parents	5.1	4.8
38. Maximizing the satisfaction of the nonparent community	4.3	4.0
39. Displaying leadership by the principal	5.1	4.8
40. The overall effectiveness of your school	5.0	4.9

Table 7
Area Superintendents' Perceptions of School Effectiveness

Effectiveness Criterion	Means of School Effectiveness Ratings	
	Elementary (N of schools = 33)	Junior High (N of schools = 22)
1. Setting school goals	5.0	4.8
2. Communicating school goals to students	4.8	5.0
3. Maintaining high expectations of students	4.9	5.0
4. Emphasizing academic subjects	4.8	5.0
5. Maximizing academic achievement	4.6	4.8
6. Providing worthwhile extracurricular activities	4.5	5.1
7. Maximizing student satisfaction and morale	4.5	4.5
8. Maintaining an appropriate school climate	4.7	4.5
9. Acknowledging staff and student achievements	4.9	4.7
10. Maximizing the job satisfaction of individual staff members	4.8	4.5
11. Maintaining high expectations of staff	5.0	5.0
12. Displaying staff cooperation and cohesion	4.8	4.6
13. Keeping up to date with new methods and technology	4.6	4.6
14. Demonstrating thorough knowledge of subject matter	4.9	4.9
15. Using appropriate teaching methods.	4.6	4.6
16. Taking advantage of staffing changes	4.6	5.3
17. Responding to changing community expectations	4.7	4.7
18. Obtaining support from the community	4.8	4.7
19. Maximizing the satisfaction of parents	4.8	4.8
20. Maximizing the satisfaction of the nonparent community	4.4	4.1
21. Overall school effectiveness	4.7	4.7

providing worthwhile extracurricular activities (5.1), communicating school goals to students (5.0), maintaining high expectations of students (5.0) and staff (5.0), and emphasizing academic subjects (5.0). Both types of schools were rated least effective in maximizing the satisfaction of the nonparent community (4.0, 4.0).

There was no consistent school-level difference across the area superintendents' effectiveness ratings on individual criteria. Elementary schools were more effective in maximizing staff job satisfaction (4.8, 4.5) and satisfaction of the nonparent community (4.4, 4.1), whereas the differences strongly favored junior high schools for taking advantage of staffing changes (4.6, 5.3) and providing worthwhile extracurricular activities (4.6, 5.3).

Two further observations also should be recorded. First, comparison of the means in Tables 3, 6, and 7 reveals that, at both levels, principals' ratings of school effectiveness were typically higher than those of teachers and area superintendents, and area superintendents viewed both school levels with somewhat less approval than that exhibited by the other two constituencies. The second pervasive attribute revealed by such a comparison is one of difference between the school levels: While principals and area superintendents expressed perceptions that were either approximately equivalent or that at least balanced out across the range of criteria, elementary school teachers regarded their organizations as considerably more effective than did junior high school teachers.

As with principals, elementary and junior high school teachers also rated the importance of 39 criteria for judging the school effectiveness. Responses by teachers at the two levels were similar for most criteria. Both groups regarded the following criteria as especially important: maintaining high expectations of students (3.8, 3.8 on the four-point scale); maintaining an appropriate school climate (3.8, 3.8); and displaying leadership by the principal (3.8, 3.8). Both groups also agreed about the least important criteria: satisfaction of the nonparent community (2.8, 2.8); low turnover of staff (3.0, 3.0); collaborative work by teachers (3.1, 3.0); frequent evaluation of students (3.1, 3.4); provision of extracurricular activities (3.1, 3.4); responses to changing community expectations (3.3, 3.2); and the advantage taken from changes in staff (3.2, 3.2). In each instance, however, both groups further admitted all criteria as important elements for school effectiveness appraisal. On a small number of items, importance was viewed differently by teachers at the two school levels. Elementary school teachers placed greater emphasis on the development of important social skills (3.8, 3.5) and acquisition of community support (3.6, 3.3) and assigned lesser importance to evaluating students regularly (3.1, 3.4) and providing worthwhile extracurricular activities (3.1, 3.4).

The nine area superintendents were invited to record the most important criteria for assessing organizational effectiveness in elementary, junior high, and senior high schools. Whereas seven considered that the same criteria apply to all school levels, the other two believed different criteria should be used. As one area superintendent noted, at the junior high school level greater emphasis should be placed on maintaining "firm and consistent

discipline and student expectations." The second contended that criteria should be child-centered in elementary schools but content-oriented at higher levels.

Teachers' and Area Superintendents' Perceptions of the Effectiveness of Principals

One item in the questionnaires completed by teachers required a rating of the principal's effectiveness. Teachers in elementary schools were more positive than were those at the junior high level (means 5.1, 4.8 on the six-point scale). Area superintendents, however, did not share teachers' view of greater leadership effectiveness in elementary schools, preferring to rate junior high principals as marginally more effective overall (4.7, 4.8). Further insight about area superintendents' responses was obtained through ratings of 12 leadership effectiveness criteria. Principals at the two levels were judged to be superior in different domains, although only in the matter of allocating tasks appropriately among staff (4.6, 4.9) was there evidence that one school level (junior high) performed at a substantially higher level. The general pattern was one of similar effectiveness across the school levels; in particular, both groups of principals were rated highly in allocating resources (5.0, 5.0); providing an appropriate work environment for students and staff (5.0, 4.8); providing feedback to staff (4.9, 4.8); and publicizing school goals (4.9, 4.8). Elementary and junior high school principals alike were regarded as least effective in enlisting the support of the nonparent community (4.3, 4.2).

Other School-Level Differences

Although the foregoing findings and comparisons focused on job satisfaction and school effectiveness, unsolicited comments by two teachers in the elementary school study also indicated perceptions of other critical differences among educational levels. One teacher's questionnaire recorded differential educational opportunities in elementary and high schools as a result of influence in the school system office: "Central office staff ... backgrounds and interests lie in high school education, so elementary education becomes neglected—the poor cousin in the system." Another statement adds weight to this assertion:

> Elementary schools and elementary teachers have always been treated as second-class citizens. Junior and Senior High schools can always find money to provide prep time for their teachers. Junior and Senior High schools always find a way to dismiss their kids a day or two or even much more before a major holiday or semester break yet elementary teachers are obliged to spend all day, every day, "right to the bitter end" with their students. Elementary teachers are required to fill out long and detailed report cards on every child while their colleagues in Junior and Senior High only fill in the appropriate circle on a computer sheet and the computer does the rest, even down to a sterile comment on the student's progress. Elementary teachers conduct lengthy and formal teacher-parent conferences at report-card time while Junior and Senior High teachers engage most often in large poorly structured interviews with all the privacy that a school gymnasium can afford. Large numbers of elementary teachers, a few Junior High teachers

and no Senior High teachers spend large amounts of time and energy in improving their teacher effectiveness.

While the researchers did not invite teachers' perceptions of school-level differences in effectiveness or other matters, such an expression of frustration and concern as this underscores the importance of this domain of inquiry. It also draws attention to the need to emphasize the perceptions of the teaching constituency in future research initiatives.

Discussion

Comparison of job satisfaction responses across the elementary, junior high, and senior high school levels revealed that, overall, the three categories of principals all experienced moderate satisfaction with their jobs. The school-level consistency of overall satisfaction (means were all within 0.1) contrasts with earlier findings (Holdaway, 1978; MacQueen & Ignatovich, 1986) about school-level discrepancies in the overall satisfaction of teachers.

In the absence of more detailed investigation of principals' job satisfaction, such consistency could cast doubt on the worth of comparative studies. However, while overall satisfaction at all levels was moderate and similar, and although all levels in the three studies were also associated with at least slight satisfaction in each job dimension investigated, the occurrence of some substantial discrepancies highlights both the relevance of detailed comparative study of organizational types and a clear basis for planning and defending remedial action.

Across the school levels, but particularly in senior high schools, relatively low satisfaction ratings were assigned to principals' satisfaction with their role in district decision making and in district negotiations with teachers over working conditions—factors that, like most others, principals regarded as at least moderately important for their overall job satisfaction. The findings about workloads, especially those of elementary school principals, were surprising and may be of concern. The comparison of workloads across the three levels contrasts with earlier observations in the United States (Kmetz & Willower, 1982; Martin & Willower, 1981) that elementary principals work fewer hours and at a less hectic pace. Clearly the United States perception was not shared by principals in Alberta. For junior high principals in particular, salary and benefits warrant attention. Some compensation for the difficult task of managing the behavior of adolescent children (according to one interviewee quoted earlier, "the greatest disaster in education"; see also Leithwood, 1986) may be worth considering. The most marked difference among the three school levels related to senior high principals' relatively low satisfaction with personal opportunities for administrative inservice. A decade earlier, Holdaway (1978) found a similar difference between elementary and senior high school teachers' levels of satisfaction with inservice education. Apparently, senior high personnel in general feel less satisfied about professional development opportunities; some effort to isolate and cater for their perceived inservice needs may be worthwhile. Principals' relationships with superordinates at all levels also seem to deserve closer research attention, to assess the quality and extent of district-school interaction. From an

administrative point of view, district administrators may do well to consider ways of rectifying elementary principals' perceived overcommitment, giving junior high school principals more cause to be satisfied with extrinsic rewards, and generally improving communication with the school executives under their jurisdiction. Perhaps something can be learned from the satisfying associations principals already seem to have within their schools.

According to elementary and junior high school principals, a variety of facets are important components of job satisfaction for both classes of principals. Indeed these groups tended to have similar priorities in connection with the relative importance of the facets specified. What did emerge from the importance ratings is a clear indication of the complexity of job satisfaction research. Overall job satisfaction of school administrators seems to depend on many facets of the job, and researchers need to direct future attention accordingly. One matter not explored in these studies but which could broaden the scope of research still further is the interconnection between work variables and individuals' personal lives as influences on job attitudes (see Blase & Pajak, 1986; Fraser, 1983). Future studies in this area may need to be approached in more expansive fashion.

The generally high ratings of overall effectiveness of schools across the three groups of principals should encourage practitioners. In addition, all types of schools were judged to be effective to some extent even on the criteria that were associated with the lowest levels of performance—although the small number of effectiveness criteria in Gunn's (1984) study makes such assertions about senior high schools difficult. Notwithstanding the limitation on detailed performance assessment and comparison, performance was also regarded as moderately effective (5.0) or better on four of the standard school effectiveness criteria—high expectations, leadership, climate, and academic focus (see Edmonds, 1979; Lezotte, 1986), but not on evaluation of elementary school students (4.8). Insofar as these dimensions are accepted as central to effective performance, principals' ratings indicate general success in Alberta schools. Senior high schools were perceived to be considerably more effective than other schools in coping with emergencies and overloads of work. Junior high schools had the best effectiveness ratings in extracurricular activities and preparation of students for subsequent pursuits. The elementary school principals responded most favorably about maintaining communication with the community and maximizing reading and writing achievement.

The finding that elementary schools enjoy a closer relationship with their communities supports Leithwood's (1986) assertion. However, the relatively poor rating of senior high schools is of concern, as are the elementary and junior high ratings about their nonparent communities. These findings highlight a need to examine the school-community issue more closely in future research. In view of the current worldwide trend toward school-based management and community involvement in educational decision making (see, e.g., Caldwell & Spinks, 1988; Coopers & Lybrand, 1988; New South Wales, 1989), research in this vein may be a matter of urgency.

The superior effectiveness of elementary schools in reading and writing may be attributable merely to a priority at this level on development of fundamental skills, compared with more diverse emphases and specializations (e.g., behavior management, extracurricular activities, career preparation) that are commonly expected of junior and senior high schools. Equally clear, however, is the support from school effectiveness literature (e.g., Edmonds, 1979; Purkey & Smith, 1982) for an academic focus in the school, which necessarily includes reading and writing.

The findings about important criteria only partially supported the school effectiveness checklists often appearing in the literature (factors supported were school climate/atmosphere, leadership by the principal, and high expectations of students). However, additional criteria emerged as important (staff morale, student satisfaction and morale, and achievement in reading and writing); and other widely commended criteria were not highly ranked (evaluation of students, academic emphasis, and encouraging academic success). Moreover, the elementary and junior high studies revealed that all 39 dimensions investigated are of some consequence at those levels, tending to support criticisms (e.g., Good & Brophy, 1986; Mackenzie, 1983) of literature (e.g., Edmonds, 1979; Lezotte, 1986) that represents a small collection of attributes as sufficient for judging overall success. Therefore, for future diagnosis and research on school effectiveness, the more complex and comprehensive organizational effectiveness models should be preferred, and the findings from theoretically grounded and more wide-ranging school effectiveness investigations (e.g., Hoy & Ferguson, 1985; Ratsoy & Miklos, 1985) should be regarded as more dependable and informative.

Implications also accrue from the importance-effectiveness comparisons. While elementary and junior high schools both emerged as highly effective on the important matter of maintaining a suitable school climate, performance at one or both levels was judged less favorably on several other important criteria. The following aspects of elementary schools seem to warrant close inspection by school and district administrators: expectations of students, leadership by principals, student satisfaction and morale, staff morale, teaching methods, and mathematics achievement. At the junior high level, attention should focus on staff-related matters: staff morale and satisfaction, acknowledgment of achievements by staff and students, and teaching methods. At the same time, the high absolute mean rating of effectiveness accorded to each of these items places these apparent problem areas in perspective and thereby may afford practitioners some consolation.

With regard to leadership effectiveness, principals across the three levels offered similarly positive appraisals of their own performance. Common to all levels were the especially high ratings of effectiveness in making timely, appropriate, and acceptable decisions and in providing an appropriate work environment for students and staff. Some criteria represented points of differing opinion. Senior high school principals saw themselves as substantially less effective than other principals in improving the performance of staff. This finding is to be expected: As noted earlier, principals at this level are known to be more distanced from classroom preparation and instruction

(Kmetz & Willower, 1982; Martin & Willower, 1981), mainly as a result of large school size, staff and subject specialization (Hallinger & Murphy, 1987; Jones, 1988), and consequent loose coupling of organization structure and control (Herriott & Firestone, 1984). In accordance with Jones' (1988) observation, attention needs to be given to ways that senior high principals can influence effectiveness through the departmental structure; research, district policy, and principals' own actions are at issue here.

In contrast to the foregoing finding, senior high school principals emerged on self-assessments as the most effective administrators in responding to changing environmental circumstances and expectations. This finding is especially interesting in view of the relatively poor performance ratings senior high principals attributed to the effectiveness of their schools in communicating with the community. These principals may have seen themselves as having to be pivotal links between an unresponsive staff and community feeling—a view that conflicts with Kmetz and Willower's (1982) comparison but supports the more general literature (e.g., Payne, 1988) about the role of principals in balancing community, school, and other competing demands. Unfortunately, Gunn's (1984) senior high school study obtained responses about principals' perceived responsiveness to externally initiated change but not specifically about their ongoing communication with the community. Accordingly, speculation about reasons for the relative adaptability of senior high principals and poorer school-community interaction at that level needs to be supported by future research. When matched with principals' relatively low self-assessments about community liaison, as well as the current climate of devolution of administrative control to schools, it seems vital to study and compare the boundary-spanning activities and effectiveness of principals at the three school levels. From a practical standpoint, higher education and inservice programs may need to be revised to assist principals with community relations.

Elementary and junior high school principals agreed on the importance of a wide range of criteria for judging the effectiveness of principals in those schools. This finding supports the conclusion reached above about school effectiveness criteria and appraisals: Assessments of administrative performance and research initiatives confined to the conventional effectiveness formulae which currently dominate effective schools programs and literature should be viewed as inadequate and, therefore, should be discouraged.

Equally interesting, however, is the finding that principals in these studies regarded effective leadership as relating most strongly to intraorganizational performance. Not only was effectiveness rated lowest on community-related criteria, but principals also viewed those criteria as least important to their effectiveness as leaders. As noted above, district administrators and educational policy makers may wish to see the perspective of school administrators broadened to include a stronger focus on community involvement and opinion.

Elementary school principals regarded themselves as least effective in some areas of particular importance: obtaining qualified staff, providing feedback to staff, and improving the performance of staff. Highly important

criteria on which junior high principals rated themselves as relatively ineffective were improving the performance of staff, obtaining qualified staff, fostering high staff and student morale, and coordinating the development of school goals. While absolute ratings need to be considered (assessments on all were at least slightly effective), each of these matters could provide a focus for more detailed research attention and district intervention.

Although the elementary and junior high studies of teachers and area superintendents were geographically more confined than the studies of principals, some noteworthy conclusions about effectiveness of schools and principals should be mentioned. Regarding teachers' assessments, junior high schools were rated as less effective than elementary schools, overall and on most criteria examined—markedly so for staff morale, stability of staff, and development of students' social skills. The effectiveness of principals was rated likewise, and junior high schools were lower on all of the conventional school effectiveness dimensions mentioned earlier in this article. This general pattern is consistent with other findings about junior high school teachers' work attitudes (Holdaway, 1978; MacQueen & Ignatovich, 1986) and may be associated with the demanding nature of teaching adolescents (see Burlinghame, 1988; Kratzmann et al., 1980).

In contrast, area superintendents regarded elementary and junior high schools as being of equivalent overall effectiveness, and no pattern of school-level differences was apparent in the area superintendents' responses about effectiveness in specific domains. Moreover, area superintendents rated junior high school principals marginally higher than elementary school principals overall; and their ratings of effectiveness on individual criteria indicated that principals at the two levels were superior in different areas of work.

With regard to perspectives of the three constituencies (principals, teachers, and area superintendents), two patterns are important. First, those directly responsible for school success tended to rate global and criterion effectiveness highest; those furthest removed from the school's operation, the area superintendents, rated schools and principals lowest. Second, respondents tended to rate effectiveness higher in domains of personal responsibility; that is, teachers in classroom matters and principals in relation to leadership effectiveness. These findings highlight the need for multiple-constituency studies and appraisals of effectiveness, as organizational effectiveness writers from other disciplines have advocated (Cameron & Whetten, 1983; Hasenfeld, 1983; Scott, 1987).

Teachers in elementary and junior high schools regarded all of the specified criteria as important to some degree for judging the effectiveness of schools. The two groups also displayed similar views about the relative importance of most criteria. The criteria proposed by area superintendents were somewhat different, although most of those respondents considered that equivalent criteria could be used to appraise effectiveness at all educational levels. These findings further support the broad views of effectiveness espoused in organizational effectiveness literature from neighboring disciplines and cast doubt on the adequacy of some school effectiveness research.

Conclusion

Although the three studies examined here each investigated job satisfaction and effectiveness in a specific organizational context, as elements of a larger program of inquiry they contributed to systematic expansion of knowledge in these domains of organizational behavior and attitudes. Comparison of the three school levels in one educational region produced evidence of some substantial differences as well as organizational similarities, giving rise to recommendations for specific research attention and practical intervention.

Likewise, comparative research of this kind should be appropriate for several other administrative and organizational attributes of schools such as culture and climate, stress, motivation, program development, and personnel and program evaluation. Moreover, school level represents only one of the available classifications—organization type is another. In Britain and Australia especially, government and independent/private schools represent fertile ground for comparison. Already, isolated studies (e.g., Weidenman, 1989) have disclosed important differences in the behavior of government and independent school principals.

Much comparative work remains to be done. Only by pursuing research in a systematic manner such as that described in this article can the pervasive and the distinctive attributes of various types of schools and administration be identified. Only then can understanding be advanced in a way that will highlight special needs and satisfy calls (e.g., Griffiths, 1988; Hallinger & Murphy, 1986; Holdaway & Millikan, 1980; Johnson, 1987; Kmetz & Willower, 1982) for the development of theories to suit specific educational levels and organizational types.

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